JAN 18 1942

Electrical World

NEWS ISSUE JANUARY 17, 1942

BRIGADIER GEORGE ADE DAVIS, Adjutant-General of the state of Oklahoma, newly elected president of the Oklahoma Gas & Electric Company, succeeding J. F. Owens, now chairman of board of directors

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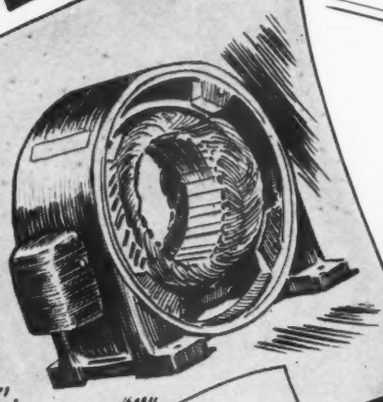
HOW DOES IT HAPPEN THAT...

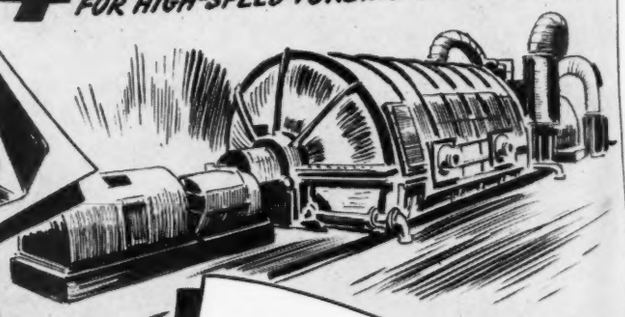
1 LIGHTING LEVELS AS HIGH AS 100 FOOT-CANDLES HAVE BECOME PRACTICAL IN AIR-CONDITIONED ROOMS?

2 THERE ARE NO PROTECTIVE "WRAPPINGS" ON THIS MODERN RANDOM-WOUND MOTOR WINDING, YET THE WINDING IS MORE RESISTANT THAN EVER TO HEAT, OIL, AND MECHANICAL INJURY?



3 THE THICKNESS OF AN ENAMEL COATING ON A SHEET OF STEEL CAN BE MEASURED AT ANY POINT FROM ONE SIDE OF THE SHEET, WITHOUT DAMAGING IT IN ANY WAY?

4 HYDROGEN GAS IS USED TO PROVIDE A MORE EFFICIENT COOLING MEDIUM FOR HIGH-SPEED TURBINE-GENERATORS?



HERE'S HOW IT HAPPENS!

1 Because the high efficiency of modern MAZDA F (fluorescent) lamps results in a "cooler" light, reducing the heat radiated to an amount that can be removed economically by the air-conditioning system.

2 Because the use of Formex* magnet wire, together with synthetic bonding resins and Glyptal* as an outer armor, gives a rigid, high-strength coil from which heat is easily dissipated.

3 Because a film-thickness gage recently developed by G-E engineers need only be placed on the sheet to measure accurately the thickness of the coating.

4 Because, some 20 years ago, Dr. Willis R. Whitney, General Electric research chief, carried out "a series of fool stunts" (as he called them) in which hydrogen was substituted for air in a fully enclosed generator.

*Reg. U.S. Pat. Off.

As science and technology move forward, the "lucky accidents" you used to hear about grow relatively fewer. Significant advances stem less often from spilling something on a stove. They are more frequently the outcome of research and development programs carried on by qualified workers and sometimes requiring costly equipment—for example, the 10,000,000-volt lightning generator, and a short-circuit-current generator weighing 80 tons.

The electrical progress being made today is largely dependent on a policy of investing human and natural resources in long-term projects, which may or may not pay a profit. G.E. has always been a firm believer in this policy, which enables research to build new and better products, to help lower your costs, and help expand your markets.

YOU INVEST IN ELECTRICAL PROGRESS WHENEVER YOU SPECIFY G-E

GENERAL ELECTRIC

201-1

Electrical World

NEWS ISSUE

Volume 117, Number 3 January 17, 1942

Ark-La Case Referred to National War Agencies

Arkansas utility commission finds that Grand River generation and transmission system to aluminum plant is a waste of capacity, of copper and of money

The construction of a transmission line by the Ark-La Electric Cooperative, Inc., from Grand River Dam to the aluminum plant being erected by Defense Plant Corporation on Lake Catherine, Arkansas, is an unnecessary duplication of existing facilities and an unnecessary use of copper, electrical apparatus and other critical war materials, the Arkansas Department of Public Utilities found at the conclusion of hearings last week at Little Rock, Arkansas.

Would Deny Application

"If we felt free to exercise our own judgment in this matter the application for the construction of this line would be denied," the commission stated in its order. "Our judgment of the evidence is that the construction of this line and the use of the Grand River Dam for the furnishing of firm power involves a waste of capacity, of copper and of money . . . It is untimely, in this emergency, to encourage or permit either private utilities or public power groups to impose their desires so as to menace the interests of the nation. It is possible that what might be proper in normal times could now be a crime."

The commission decided to send copies of its order and of the testimony to the War Department, to OPM and to SPAB. If these authorities, or that one having power to decide the matter, indicate that the construction of the line is for the best interest of national defense, then the commission will issue an order for construction of the line to furnish power to the aluminum plant.

The commission has postponed for thirty days its decision on the Ark-La proposal to construct a generating plant on the Ouachita River and a transmission line to the aluminum plant site. The application will then be denied unless the cooperative discloses the sources from which it expects to obtain second-hand generators.

Finally, the commission denied without prejudice the cooperative's application to construct other transmission lines until the cooperative "is able to describe the lines which it proposes to erect and the service which it proposes to furnish."

Insufficient Power

The commission found that the Ark-La Electric Cooperative had contracted with Defense Plant Corporation to supply 32,500 kw. of interim power, but that the source, Pensacola Dam on the Grand River, could provide at 745 ft. height only 22,500 kw. of firm capacity.

Early in the consideration of the plans for the aluminum plant the commission states that utilities were asked to furnish 65,000 kw. of interim power. The utilities formed a pool and proposed to build interconnections at their own expense providing a net dependable capacity of 1,512,300 kw., leaving 218,040 kw. available for the aluminum plant and for reserves.

This pool made it possible for Arkansas Power & Light to contract for 65,000 kw. of power to the Lake Catherine plant and it also offered to supply the additional 32,500 kw. needed.

Leland Olds, chairman of the Federal Power Commission, appeared at the hearing and testified that the proposed line was going to be built, the order states, and that the FPC could order it built.

•

Priority Systems Revised Next Month

PD-1 Priority applications, the "Jack-of-all trades" form used to get a rating for an individual order which doesn't fit into any specific priority pattern, will become fully extendable on February 2, OPM disclosed this week. So will PD-3 applications, the PD-1 alternate used on military and government war orders.

The new system, embodied in priorities regulation No. 3, contemplates a fundamental alteration of the priorities system in favor of eliminating paper work and duplication of applications now necessary to obtain materials at different stages of fabrication for the same job.

After February 2 a new and simplified form, designated PD-1A, may be used to apply to OPM for a rating on a specific order, just as is now done. The rating will be stamped on the face of the application and the supplier and his suppliers may extend the rating as many steps down the production line as necessary by self-indorsement, without an OPM counter-signature. This will eliminate the requirement that a supplier obtain a PD-1 rating on the sub-supplier for compo-

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FOR AUTOMATIC BLACKOUT—Owner of a Schenectady machine shop installs G. E. photo tube equipment to provide automatic blackout. Electric eye is pointed toward street light on the corner. When street lights are turned off the electric eye cuts off all machine shop lights. When street lights are turned on again electric eye turns on shop lights

nent parts of a rated order. A similar procedure is made available for PD-3 forms, which have recently been extendable in cases involving less than $500.

While the new process will become available on February 2, it will be optional until March 1, at which time it becomes mandatory on all applications. Forms PD-1 through PD-5 will then be eliminated.

Extension of the PD-1A and PD-3A rating extensions will be limited to deliveries of material to be physically incorporated into material to be ultimately delivered to the original recipient of the rating, or to material which is neither greater in quantity nor delivered earlier than required to replace inventories sold from inventory.

PD-1A forms will be available from OPM from priorities field offices, but not until shortly before February 2. They can be reproduced. Priorities regulation No. 1 applies to the new procedure regarding keeping of records.

•

Chicago Plant Seeks Increased Diversion

Increased diversion of 6,700 second-feet of water from Lake Michigan would develop an additional $500,000 worth of electricity per year and save 50,000 tons of coal annually, H. P. Ramey, assistant chief engineer of the Chicago Sanitary district, declared recently in commenting on Chicago's recent petition to the Supply Priorities and Allocation Board seeking to raise the restriction on diversion of water from Lake Michigan.

"The Chicago sanitary district now is using the 1,500 second-feet allowed, producing 8,200 kw. continuously in the Lockport plant," Mr. Ramey stated. "We have two new hydro-electric turbo-generators. We now use one all the time and the second one-fourth of the time.

"If we could get an increase of 1,700 cu.ft. of water a second we could use the second unit all the time and increase our output by 4,800 kw. to a total of 13,000 kw.

"If we could get the 1,700 and an additional 5,000 ft. per second we could also use three old units in that same plant continuously and produce enough kilowatts to total more than 20,000."

•

Plans Municipal Plant

Crisfield, Md., plans to have its own electric plant. An enabling act, authorizing a $500,000 bond issue for the construction of the plant, was passed at the last session of the Maryland General Assembly and now the Mayor and Council have made application to the Maryland Public Service Commission for permission to issue the bonds.

•

Curbs Store Lighting

For the duration, all store signs and window lights in downtown business district in Tacoma, Wash., will go out when the stores are closed to shoppers for the day, retail merchants have announced. This is an effort to co-operate with military orders that all stores and buildings must be able to blackout within 60 seconds after an air-raid alarm.

NEWS BRIEFS

UNITED STATES BUREAU OF RECLAMATION has announced that certain construction areas of the Central Valley Project have been closed to the public, but that visitors still are permitted at the vista houses at Shasta and Friant dams. Since the outbreak of war additional armed guards have been employed on all divisions of the project.

MOBILE POWER TRANSFORMERS—six of them—each rated at 15,000 kva., are under construction at G. E.'s Pittsfield works for American Gas & Electric Co. Each unit will be mounted on a specially designed railroad car for transportation to localities on the company's systems.

A SIGN MOGUL in Times Square, New York, is reported to have arranged a remote control of seventeen displays so that all can be turned off within eight seconds.

MORE THAN 90,000 PERSONS visited Buffalo area electrical appliance stores to deposit their Christmas Sweepstakes coupons, Samuel S. Vineberg, manager of the Electric Association of the Niagara Frontier, has announced. By depositing their sweepstakes stubs in boxes located in the stores, customers have a chance to win Christmas gifts of electrical appliances. This was the sixth year the promotion was repeated.

MAINE SPORTSMEN'S CLUBS, 20,000 members, will cooperate with state forestry department wardens in establishing a state-wide "defense network" to guard against depredation affecting the areas of forest streams, source of power for many war industries.

"TO ACCUSTOM CITIZENS to much less light than is now used" dim-outs have been effected in test areas in New York City. The general program so far has been to cut street lighting by approximately 50 percent.

BALTIMORE, ANOTHER CITY planning blackouts, has decided to forego hoods on its 17,000 gas street lights. Instead a wire lever will be attached to the clock mechanism on each lamp and wardens will turn each lamp on or off.

BRITISH COLUMBIA ELECTRIC had prepared a big "Light Up for Christmas" campaign when the Jap attack necessitated blackouts. The company changed its advertising to push more light indoors, to make homes twice as bright as before, to make homes sparkle with cheerfulness and warmth.

Utilities to Get 82% of 1942 Turbine Production

OPM schedules 2,290,000 kw. of land steam turbines to be completed this year to utility companies — Lacks 500,000 kw. of meeting utility schedules

OPM has scheduled 2,290,000 kw. of steam turbo-generators for delivery to utility central stations during the calender 1942 out of a total of 2,800,000 kw. of land steam turbine equipment listed for completion by manufacturers this year. The other 510,000 kw. of equipment can be lumped only as for "non-utility" delivery.

Both the total land turbine production and the utility share of it are considered the maximum possible from manufacturing facilities now available or which will be available during the year for non-marine production. It appears quite likely that demands for marine turbines, and for other ordnance which uses some turbine-building tools, will force curtailment of the over-all figure. It is possible also that additional non-utility demands for naval establishments or war industrial plants may cut into the present utility quota.

The present quota is almost identical with the steam capacity actually added to utility systems in 1941, but is nearly 500,000 kw. short of the additions scheduled by utilities for 1942. These are not necessarily direct comparisons because the 1941 additions and the 1942 schedules represent equipment put into service while the OPM figure represents turbines for delivery out of manufacturers' shops.

Planned Program

OPM's quota of total land turbine production and of utility deliveries is the work of the power branch, in conjunction with the Navy and Maritime Commission and with manufacturers, in line with the supply priorities and allocations board's policy of planning the war program as far ahead as possible.

Turbine manufacturers' schedules have been carefully gone over, unit by unit, for all of 1942 operations, both marine and land. The three government branches have worked out the portion of output to be allotted to ships, both naval and merchant, and for generating power.

The power branch has combed the orders for 1942 deliveries to utilities and to "other users" and has drawn up a unit-by-unit schedule for delivery of the land turbine quota. A number of turbines originally scheduled for 1941 delivery which were pushed into this year by competing demands upon manufacturers have been keyed into this year's list.

In the process, inevitably, even more turbines ordered for 1942 delivery have been shifted into 1943. The detailed schedule is not released and, of course, is subject to change as developing war circumstances dictate.

•

Discuss Exchange of New York Properties

Trustees of the Associated Gas & Electric Corp., now in reorganization, have held preliminary discussions with the Niagara Hudson Power Corp. aimed at an equitable exchange of properties in areas where one or the other company dominates the field, Dr. Willard L. Thorp, A.G.E. co-trustee, revealed in an interview in Buffalo.

Dr. Thorp said that it was proposed to exchange some parts of the New York State Electric & Gas Corp. serving western New York communities for some properties of Niagara Hudson.

"New York State Electric & Gas, a subsidiary, is one of the largest and best assets of the Associated Gas system," said Dr. Thorp. "While I am more familiar with broad picture of the entire Associated Gas system than with individual operating units in the reorganization program, I know there is nothing to do with some of the outlying properties but to sell them. They must be lopped off.

"We have had discussions with Niagara Hudson executives for a mutual exchange of some of these properties but no decision has been reached."

•

Utility Cannot Intervene in Co-operative's Case

Federal Power Commission has denied the petition of the Iowa-Illinois Gas & Electric Co. for leave to intervene in the proceeding relating to the application of the First Iowa Hydro-Electric Co-operative, Muscatine, Iowa, for license for a proposed hydro-electric project on the Cedar River in Iowa, designated by the commission as Project No. 1853.

The order of denial states that "no public interest will be served by granting the intervention requested" and grants the petitioner the privilege of participating in the hearing on the application, but only to the extent of introducing relevant and material evidence. The company alleged, among other things, that the proposed project would compete with petitioner.

SUBSTATION DEFENSE ZONE—Closely guarded by a company watchman, with all parking near the building prohibited by fencing and curb signs, this utility substation in an Eastern community is further protected by armed municipal police neighborhood patrol and the provision of sectional window screening, enabling upper and lower areas of the windows to be swung open and shut without interference. Since Pearl Harbor all skylights in this installation have been eliminated in favor of solid construction

MORE POWER FOR DEFENSE—More generating capacity to supply Milwaukee's numerous defense industries went on the line December 31, 1941, when Wisconsin Electric Power Company put a new 35,000-kw. Allis-Chalmers turbo-generator into operation at the Commerce Street station. Shown at the starting of the new unit are (l. to r.) George G. Post, vice-president in charge of power and Fred Dornbrook, chief engineer of power plants, Wisconsin Electric Power Co.; Hans P. Dahlstrand, engineer in charge, steam turbine department, Allis-Chalmers, and W. E. Gundlach, electrical engineer Wisconsin Electric Power Co.

New Unit Started at Commerce Street

Newest generating unit of Wisconsin Electric Power Co., Milwaukee, a 35,000-kw. turbo-generator operating on steam at 1,200 lb. pressure, 900 deg. temperature, was put into operation at Commerce Street December 31, 1941, by Fred Dornbrook, chief engineer of power plant. The new unit raises the available generating capacity of the Milwaukee company to 483,700 kw. An 80,000-kw. addition to the company's Port Washington station is now under construction and is to be ready early in 1943.

Part of a $4,137,000 plant addition at Commerce Street, the new unit is the largest of its particular type ever built by the Allis-Chalmers Company. It is supplied with steam by a new 375,000-lb.-per-hour boiler located in a newly constructed boiler house adjacent to the plant.

The boiler, which burns powdered coal, removes from service eight overage boilers. To make room for the new turbo-generator six old steam engines and generators were dismantled having a capacity of 10,000 kw.

A feature article on this latest addition to Commerce Street station appeared in ELECTRICAL WORLD, December 27, 1941, page 46.

•

Brigadier-General Heads Large Utility

With the nation at war it was fitting this month that the new president of Oklahoma's largest utility should be the state's Adjutant-General, a man trained by military and business experience to coordinate military and civilian defense activities with industrial and power supply services in his state. For Oklahoma, atop the nation's oil reservoir, occupies a vital position today as America's war-time filling station.

Brig.-Gen. George Ade Davis (see front cover), until this month executive vice-president of Oklahoma Gas & Electric Co., Oklahoma City, has been closely associated with the army since his college days in 1902. He saw service on the Mexican Border and in France. On his return from France General Davis was mustered out with the rank of Major in June 1919.

As a member of the 45th Division, Oklahoma National Guard, General Davis about a year ago accepted the Governor's request to become Adjutant-General of the state of Oklahoma in command of all state troops, with the rank of Brigadier-General. Today, in addition to his utility duties, he is charged with organization of civilian defense of the state under the Governor's direction.

General Davis joined the Byllesby Engineering & Management Corp. in Chicago in 1919 and in February, 1920, went to Oklahoma as assistant to the manager of the Oklahoma Gas & Electric Co. It was on this assignment that he built his present enviable reputation in the utility field by organizing a public relations program and employee relations plan which are nationally recognized today as conspicuously successful.

•

Chosen for Wage Dispute

Aaron Horvitz, a commissioner of the United States Conciliation Service, has been designated impartial chairman of the seven-man review board set up to decide the wage dispute between Consolidated Edison Co. and the Brotherhood of Consolidated Edison Employees, an independent union.

•

Drops Lighting Plan

Because of the war and resulting inability to obtain materials for non-defense projects, the Board of Public Utilities, Jamestown, N. Y., has temporarily abandoned plans for expenditure of $12,000 or more for installation of a new ornamental street lighting system in East Second Street, that city.

Ice Curtails Power Supply at Niagara

Twenty-one Niagara Falls industrial plants this week operated with a curtailed electric power supply as an increasingly serious slush-snow condition in the Niagara River reduced the amount of water going into hydro-electric generating plants. There was no work stoppage at any factory, however.

Three Niagara Falls Power Co. hydro plants were producing only about 50 percent of the normal output, the Schoellkopf and Adams stations on the U. S. side and the Rankins station in Canada.

The whole Niagara River was clogged with slush, preventing water from reaching power plant intakes at the Falls in adequate quantities to turn the generators at full capacity. Conditions were aggravated by the low stage of the river resulting from increased diversion of water at the Falls and low lake levels. The Niagara River level is about 2½ ft. below normal.

To make up for the deficiency in industrial power, the Niagara Hudson system drew power to the Niagara Frontier area from as far east as Albany.

BLACKOUT LIGHTING DISPLAY—A display of available blackout lighting materials, including improvised fixtures, shaded spotlights, phosphorescent and fluorescent paints, coated materials and opaque window coverings has been set up by the Chicago Lighting Institute for use by organizations studying blackout methods. The blank panel and "Shelter" sign are fluorescent. Other signs shown are phosphorescent

Special Exemptions for Refrigerators

Unit quotas for refrigerators, both mechanical and ice, under OPM curtailment programs, do not include production for U. S. Government agencies, lend-lease orders, allied Governments, or defense housing projects involving competitive bidding. This is the ruling of amendments to the applicable Limitation Orders issued by Priorities Director Nelson.

Two other curtailment orders, each representing a step toward tightening of restrictions in an effort to speed conversion of civilian industry to war output, also have been issued. First quarter 1942 unit quotas for vacuum cleaners have been set at from 60 to 75 percent of factory sales in the base year ending June 30, 1941, the cuts varying according to size of producer. In the last quarter of 1941, the industry was cut an average of less than 10 percent.

The second order restricts use of steel by ice box makers to 60 per cent of the monthly average in the base year. The previous curtailment was 35 percent.

•

Power Shortage Unlikely

P. C. Spowart, sales manager of Seattle City Light, declared recently that none of the residential, commercial or industrial customers of the publicly owned electric system has cause to fear any power shortage despite increased demands incident to the war. Mr. Spowart paid tribute to the late J. D. Ross, long-time superintendent of City Light, for having made such assurances possible.

•

National Committee for Utility Trucks

Interstate Commerce Commissioner John L. Rogers is heading up a Central Motor Transportation Committee, part of the Transportation Division of the Advisory Commission to the Council of National Defense, to formulate and execute plans for the efficient and economical use of highways and commercial vehicles, including utility vehicles.

Its members will cooperate with government agencies and those furnishing or using transportation facilities in promoting national defense, to assure sufficiency of commercial motor vehicles to meet the needs of National security.

Sixteen regional committees will facilitate the work of the Central Motor Transportation Committee, and the utility representatives of the sixteen districts are as follows:

J. A. Herlihy, Boston Edison Co., Boston; R. H. Clark, Consolidated Edison Inc., New York; Lynn Edsall, Philadelphia Electric Co., Philadelphia,; S. G. Page, Philadelphia Co., Pittsburgh; Jean Y. Ray, Virginia Electric & Power Co., Richmond; R. Whitfield, Georgia Power Co., Atlanta; F. B. Penick, Southern Bell Telephone & Telegraph Co., Nashville; G. D. Gilbert, Illinois Bell Telephone Co., Chicago; G. E. Loughland, Northern States Power Co., Minneapolis; R. J. Collins, Kansas City Power & Light Co., Kansas City; S. M. Sharp, Southwestern Gas & Electric Co., Shreveport; Ben Smith, Southwestern Bell Telephone Co., San Antonio; F. T. Parks, Public Service Co., Denver; B. A. Barickman, Mountain States Telephone & Telegraph, Billings; G. H. Keiburtz, Puget Sound Power & Light Co., Seattle; P. H. Ducker, Southern California Edison Co., Los Angeles.

Utility motor transportation officials throughout the United States will be requested, it was said, to contact their regional representatives, who will exchange information on all forms of motor transportation shortages, congestions, delays in shipments, scarcity of parts and the effect of priorities affecting production of trucks, buses and their repair parts.

•

Large Substation Planned for Tacoma

Work is expected to start shortly on a $1,000,000 substation near Tacoma to serve a 40,000,000-lb. aluminum plant and to tie in with the Tacoma municipal system. Defense Plant Corporation has authorized the Bonneville Power Administration to proceed with construction.

Power will reach the substation via a 115-kv. line now in service between Bonneville's Covington station and Tacoma.

A second 115-kv. line is to be constructed between Covington station and Tacoma as part of a program scheduled to begin in July.

•

Utility Increases Capacity 14 Percent

With a new $22,800 transformer bank being added to the Pacific Power & Light Co. substation on North Sixth Avenue, capacity of the company's power delivery facilities in the Walla Walla area will soon be increased an additional 14 percent, according to W. H. Till, district manager.

Three new 1,500-kva. transformers, each standing more than 13 ft. high, comprise the installation and company engineers have designed specially constructed concrete bases at the substation to accommodate the additional power installation. Nearly 4,000 gallons of oil will be required to fill cooling and insulating tanks in the three-unit bank.

Installation of the new transformer bank marks the second addition to the power company's substation facilities in this district in the past few months. Automatic voltage regulators were installed on two other feeder lines earlier this year at a cost of $10,750.

California Construction Program in Final Stages

Southern California Edison completing four-part program in next few months to tie in with 82,500 kw., added at Bonneville

Southern California Edison Co. is entering the final stages of an important construction program which will make available an additional 82,500 kw. of Boulder Dam power and tie in Boulder Dam more closely with its major transmission system, providing additional energy and more reliable service for Southern California's centers of industry and population.

Totaling approximately $6,500,000, the construction program has four phases:

1. The most important is the construction of the Edison Company's second 220-kv. line from Boulder Dam to its receiving station at Chino. This 233-mile line, paralleling in general the company's first line from the dam, will be completed and in operation shortly. A crossover station at Pisgah is a part of the project.

2. The company is extending its 220-kv. transmission line from Chino to its Laguna Bell substation near Maywood. This work will be completed during March.

3. In operation since August, 1941, is the new 220-kv. line from the Company's Barre substation near Stanton, in Orange County, to its Lighthipe substation in North Long Beach. The 220-kv. line from Chino to Barre was built in 1939 as a part of the first Boulder line project.

4. Installation of the third 82,500-kw. generator at Boulder Dam assigned to the company is expected to be finished by July, 1942.

200,000-Kva. Link

The new Barre-Lighthipe line has a carrying capacity of 200,000 kva., is 15.8 miles in length and double-circuit steel towers are used, similar to those on Edison's Lighthipe-La Fresa 220-kv. line. Total height of the towers is 138 ft. 8 in. In two locations where special clearances are required 16 to 48-ft. extensions are used.

Conductors are of the ACSR type, size 605,000 cir.mil, with 54 strands of aluminum and seven strands of steel reinforcing. Conductors are arranged vertically, in single circuit, with provision for a future circuit.

At Barre substation new 220-kv. buses and racks of the four-circuit ring type were installed, as were three 220-kv. oil circuit breakers transferred from Gould substation and new carrier-current relay equipment.

Equipment changes made at Lighthipe substation included new carrier-current relay equipment, rearrangement of the 220-kv. rack and installation of a 220-kv. oil circuit breaker transferred from Saugus substation.

•

New York Commission Adopts Utility Proposal

The New York Public Service Commission has accepted a proposal of the Niagara Falls Power Co. regarding rates and exess profits which may result from the added diversion of water in the Niagara River, in excess of 20,000 cu.ft. per second.

The proposal adopted by the commission set forth that in any future determination of the value of the company's property the commission will deduct all accumulated excess profits obtained by the company and this deduction will not be in lieu of depreciation charges.

•

Rochester Contemplates Adding 25,000-Kw. Unit

Rochester Gas and Electric Corp. will be able to handle its 1942 peak loads, but still intends to add a 25,000-kw. turbo-generator to the system for a larger margin of safety, President Herman Russell stated at a recent meeting of the A.I.E.E., Rochester section.

Mr. Russell called attention to the fact that his company had added a new 15,000-kw. generator to the system, which went into operation in October.

•

Revised Bonneville Rates Approved

Revised wholesale rate schedules of the Bonneville Power Administration have been approved by the Federal Power Commission, Paul J. Raver recently stated.

Bonneville's optional wholesale power rate is revised so that all kilowatt-hours purchased in excess of 50 percent load factor are billed at 1 mill per kilowatt-hour in place of the former rate of 2½ mills. Cost of power up to 50 percent load factor remains the same.

Users of power for irrigation and drainage pumping will be provided with power on a monthly basis so that the high seasonal demand for irrigation service will not result in higher minimum bills during off-season months. A provision is made that a maximum of six months' demand charge will be made for irrigation and drainage pumping power.

A new provision added to the schedules affecting new industries provides that the billing demand for the first six months of operation will be established on a daily basis. This permits such industrial plants to experiment with new electrical processes without penalty for fluctuation in load during the initial six months of operation.

Changes included the addition to the rates schedules of a computed demand as the basis for billing in those cases where purchasers generate part of their own power supplies.

WEST PENN toy collectors—The Girls' Club in the Pittsburgh office of West Penn Power Co. helped Santa Claus by collecting toys for the Children's Service Bureau, a charitable institution. Clare Miller (left) and Leona Braun bring in some contributions as the campaign gets under way. West Penn employees also contributed to a voluntary fund which sent a Christmas present (a $5 check) to each West Penner in the armed forces of Uncle Sam

Engineering Education Held Vital to Victory

Research and applied scientists essential to success of fighting forces — Lack of adequate personnel challenges educators — Students expected to complete courses

"To win this war the Allies need many brave soldiers, sailors and aviators but they will be uselessly sacrificed unless we arm them with more numerous and powerful tanks and other anti-tank devices with which to fight tanks; unless we build fighter planes so numerous and equipped with such ingenious instruments and powerful armament that enemy bombers will be helpless before them; unless we invent and build a host of submarine detection and other technical devices more potent than those which our enemy can bring to bear against us, and unless we keep continually ahead of him in this terrible race for technical superiority," declared President Karl T. Compton of the Massachusetts Institute of Technology at a recent convocation of staff and students at Cambridge. Himself a distinguished research physicist and administrator in close contact with the developing necessities of mechanized warfare, Dr. Compton sought to clarify the relationship of engineering colleges, faculties and students to the emergency into which the nation has been plunged. He said in part:

Brain Power

"Never before has there been a war in which brain power has been so much more potent than brute force or undisciplined mob enthusiasm. For warfare today is highly mechanized; a few tanks can rout the bravest regiment of infantry; a squadron of bomber airplanes can destroy a fortress; a submarine can sink a mighty battleship. If our war effort is to be successful and not needlessly wasteful of American lives, it must be fought on the highest level of technical skill which our scientists and engineers can devise, which our industry and labor can implement through production, and which our armed forces can use through sound training and progressive leadership. Furthermore, we must be far-sighted enough to plan for a war whose decision may not be reached in two or even three years.

"We should give first priority to the education and training of engineers and scientists to the highest degree of competence. In this essential field we have unexcelled facilities. While an enormous program of training skilled workers for industry and the armed services is wisely being accelerated all over the country, it is equally essential to have more physicists, chemists, applied mathematicians, communications and power engineers, metallurgists, aeronautical and automotive engineers, meterologists, economic geologists, ship designers, nutrition experts, industrial management engineers—in effect, the whole gamut of M.I.T.'s product. Particularly urgent is the need for men skilled in design, construction and operation of instruments involving the most advanced knowledge of electronics, optics, acoustics and mechanics. I believe M.I.T.'s most effective contribution is to turn out such men.

"War emergency subjects should be substituted for cultural courses, gifted students should be urged to post-graduate study and staff and laboratory researches should be devoted to solution of war problems," Dr. Compton said.

"As to the national policy regarding permission for students in scientific or engineering courses to complete work for their degrees," Dr. Compton said, "we only know that the word up to now is that such permission is contemplated. We are convinced that, for most of our students, this policy is in line with the best national interest, and we shall direct our efforts and influence to this end. Officers most actively concerned with recruitment of high-grade scientific personnel for war services are acutely conscious of the almost desperate lack of adequate personnel of this type, and are even advocating governmental subsidies to encourge promising graduates in science or engineering to go into post-graduate study as a patriotic duty."

To implement its war effort, M.I.T. will speed up the program of the senior class, to permit graduation on April 27. Special study and training in subjects important for war will be authorized. No drastic changes are in sight for the schedules of the first three years, or in the graduate school, lest the quality of professional education be weakened.

The institute does not favor a continuous undergraduate program without summer vacations and beginning early in the summer following secondary school graduation. Experience indicates that this turns out immature graduates with inferior education and mentally stale, and the total net gain is only one year's crop of graduates.

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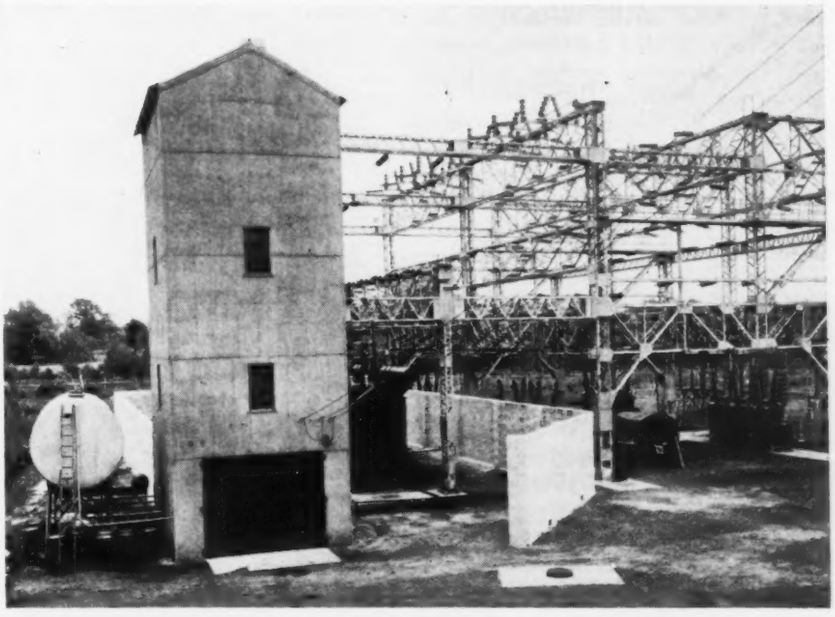
Votes to Sell Plant

At a special election voters in Savannah, N. Y., approved a proposition to sell the municipal electric light and power plant to the New York State Electric & Gas Corp. As soon as the sale is confirmed by the Public Service Commission the work of changing over from 25 to 60 cycles will begin.



ANTI-SABOTAGE BARRIER—To protect 30,000 kva. of transformer capacity against rifle fire and other sabotage, a northern utility has just constructed this concrete, hollow-block inclosing wall, 10 ft. high and 7 in. thick. In addition, the entire substation site is fenced in and guarded

E.E.I. Commercial Work Devoted to Victory

A reorientation of activities of commercial committees of the Edison Electric Institute directed toward a Victory Program has been announced by President C. W. Kellogg.

How to use electricity in industries so as to speed maximum, efficient production without waste, and to improve quality, will be studied by one of the committees. This committee will also study how to build up system load factors to reduce peak loads and losses on utility systems.

Commercial studies will aim to stimulate the service phases of utility company operations and to foster a type of advertising which will stress such use of present equipment as will insure a minimum requirement of critical materials. Committees will encourage the repair of present appliances and major equipment so that customers' devices may continue serviceable. Cooperation with other branches of the electrical industry concerned with sales and service of appliances will be sought.

The graver needs that confront the nation affecting both home and industry will require better lighting arrangements. Broader opportunity is given for committees to continue study of lighting applications in industry to increase output, improve products, decrease work and conserve eyesight.

A home service committee will study kitchen rearrangement for labor saving and meal planning to meet the increasing cost of living, while maintaining the maximum nutritive values of food. A farm service committee will study methods and equipment which will give maximum increase in farm production, relief in farm labor requirements and minimize loss in perishable food products.

Committee studies are to be organized also along the lines of research and planning for the post-war period when intensified sales efforts must be relied upon to cushion the economic shock at the termination of the defense program.

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Urges Power Truce

At a recent meeting held in Eugene, Ore., the Willamette Valley Lumbermen's Association urged Congress not to make any power bill appropriations during the present emergency in a resolution passed by the members. A large representation of western Oregon lumber men attended. The resolution states that during the progress of the war there should be careful conservation of our resources, expenditures both public and private limited to essentials and complete and wholehearted co-operative effort among public and private power agencies to bring production to the highest possible point.

•

Discuss Color Lighting Before Georgia I.E.S.

The subject of "Color" as it concerns the illuminating engineer was discussed by Roy A. Palmer, Duke Power Co., Charlotte, at the winter meeting of the Georgia section, Illuminating Engineering Society, held recently in Atlanta. An interesting feature of Mr. Palmer's presentation was a demonstration making use of a "colorama," a device for blending colors in symmetrical designs, and a projecting type kaleidoscope.

E. T. Austin, General Electric Co., also addressed the meeting, discussing features of the Hurt Memorial Fountain completed recently in Atlanta which makes use of varied colored floodlights and water patterns in a cycle consisting of more than forty different effects every six minutes.

MEETINGS

Canadian Electrical Association — Annual winter conference, Mount Royal Hotel, Montreal, Que., January 19-20; Western members, joint meeting with Northwest Electric Light & Power Assn., Business Development Section and Commercial Section, Vancouver, B. C., March 4-6. B. C. Fairchild, secretary, 804 Tramways Buildings, Montreal.

American Institute of Electrical Engineers—Winter convention, New York, N. Y., January 26-30. H. H. Henline, national secretary, 29 West 39th St., New York, N. Y.

American Society of Heating and Ventilating Engineers—Annual meeting, Bellevue-Stratford Hotel, Philadelphia, Pa., January 26-29. A. V. Hutchinson, secretary, 51 Madison Av., New York.

Edison Electric Institute — Electrical equipment committee, William Penn Hotel, Pittsburgh, Pa., February 2-3; transmission and distribution committee, Hotel Cleveland, Cleveland, Ohio, February 9-11. Major H. S. Bennion, managing director, 420 Lexington Avenue, New York, N. Y.

American Institute of Mining and Metallurgical Engineers—Annual meeting, Institute headquarters, New York, February 9-12. A. H. Parsons, secretary, 29 West 39th Street, New York, N. Y.

National Electrical Manufacturers Association — Midwinter meeting, Palmer House, Chicago, Ill., February 16-20. W. J. Donald, managing director, 155 East 44th Street, New York, N. Y.

North Central Electrical Industries—Biennial Electrical Convention Week, Radisson Hotel, Minneapolis, Minn., February 22-25. W. A. Ritt, secretary-manager, 234 Foshay Tower, Minneapolis, Minn.

American Society for Testing Materials — Committee week and spring meeting, Hotel Cleveland, Cleveland, Ohio, March 2-6; annual meeting, Chalfonte-Haddon Hall, Atlantic City, N. J., June 22-26. R. E. Hess, assistant secretary, 260 S. Broad St., Philadelphia, Pa.

Oklahoma Utilities Association—Annual convention, Biltmore Hotel, Oklahoma City, Okla., March 23-24. Miss Kate A. Niblack, secretary, 625-626 Biltmore Hotel, Oklahoma City, Okla.

American Society of Mechanical Engineers — Spring meeting, Rice Hotel, Houston, Texas, March 23-25. C. E. Davies, national secretary, 29 West 39th St., New York, N. Y.

Missouri Valley Electric Association—Annual engineering conference, Hotel Continental, Kansas City, Mo., March 26-27. I. D. Pettegrew, director, 1527 Sharp Building, Lincoln, Neb.

Labor Contract Renewed at Virginia Electric

Renewal of a 4½-year-old contract between the Independent Organization of Employees of Virginia Electric & Power Co. and the management was effected January 10, covering some 3,000 employees of the company in eastern Virginia and northeastern North Carolina, and providing, among other matters, a general pay increase of about 5 percent.

The system-wide contract, according to William Earle White, attorney for the independent union, covers all employees of the company not supervisory in character. One of the pay hikes listed by Mr. White was that of 5 cents an hour for transportation employees, from the present rate of 68 cents to 73 cents—the fourth, Mr. White said, transportation employees have received since the first independent union contract went into effect in August, 1937.

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Connecticut Utilities Seek Emergency Tie-in

United Illuminating Co., New Haven, Conn., has filed an application with the Federal Power Commission, seeking approval of a permanent connection for emergency use only between applicant's facilities and facilities of the Connecticut Light & Power Co. at Devon, Conn. The application asks for an order decreeing that United Illuminating shall not become subject to the jurisdiction of the commission by reason of the interconnection or by reason of the transmission of electric energy thereby, provided the interconnection is operated for emergency use only.

The proposed interconnection would connect both circuits of a tie line running between applicant's generating stations at New Haven and Bridgeport through switching equipment and a 30,000-kva. transformer to the 66,000-volt bus of the Connecticut Light & Power Co.'s generating station at Devon.

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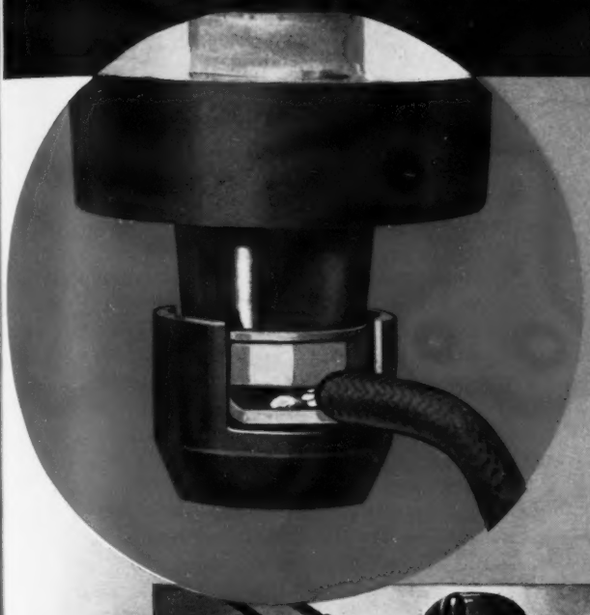
Greenport Plant Warned

New York Public Service Commission has ordered the village of Greenport in Suffolk County to erect around its municipal electric plant an 8-ft. wire fence, topped with barbed wire, as protection against intruders during the war emergency. Milo R. Maltbie, chairman of the commission, said that the Greenport plant was the only one in the state that had failed to co-operate with the commission in a war emergency program for adequate protection of public utilities againt sabotage.

No Feeder Lock-outs or Phase Grounding

with L-M Lightning Arresters



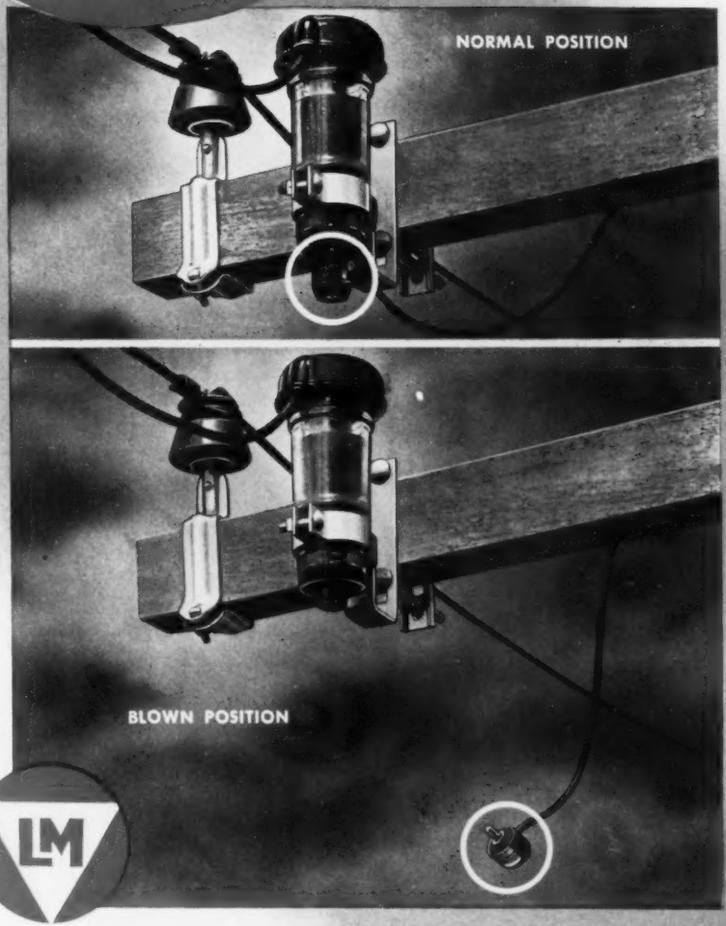
In a good Lightning Arrester you expect these important features:

High surge capacity.
Low IZ drop.
Positive moisture proofing.
Permanence of valve material characteristics.
Visual-inspection glass housings.

L-M Lightning Arresters give you all these

plus the ISOLATOR*

WHAT THE ISOLATOR IS: The ISOLATOR, located at the base of every L-M Arrester is a positive circuit disconnecting device activated by heat.



HOW THE ISOLATOR WORKS: Surges within the capacity of the L-M Arrester are carried to the ground in the normal manner with no effect on the ISOLATOR.

Should an L-M Arrester ever become damaged by an abnormal surge, the continued flow of follow current to ground causes the ISOLATOR to operate instantly, rupturing the ISOLATOR housing and throwing the ground lead clear — thus avoiding any chance of a permanently grounded feeder.

IN ADDITION, the ISOLATOR, when in blown position, serves as a positive indication of a damaged Arrester, easily visible from the ground. This permits a damaged Arrester to be located quickly and easily for replacement.

THE ISOLATOR is fool-proof and safe. When it operates no parts are thrown to the ground, and it can only operate under the conditions described. The ISOLATOR is mechanically strong and cannot be damaged by ordinary handling.

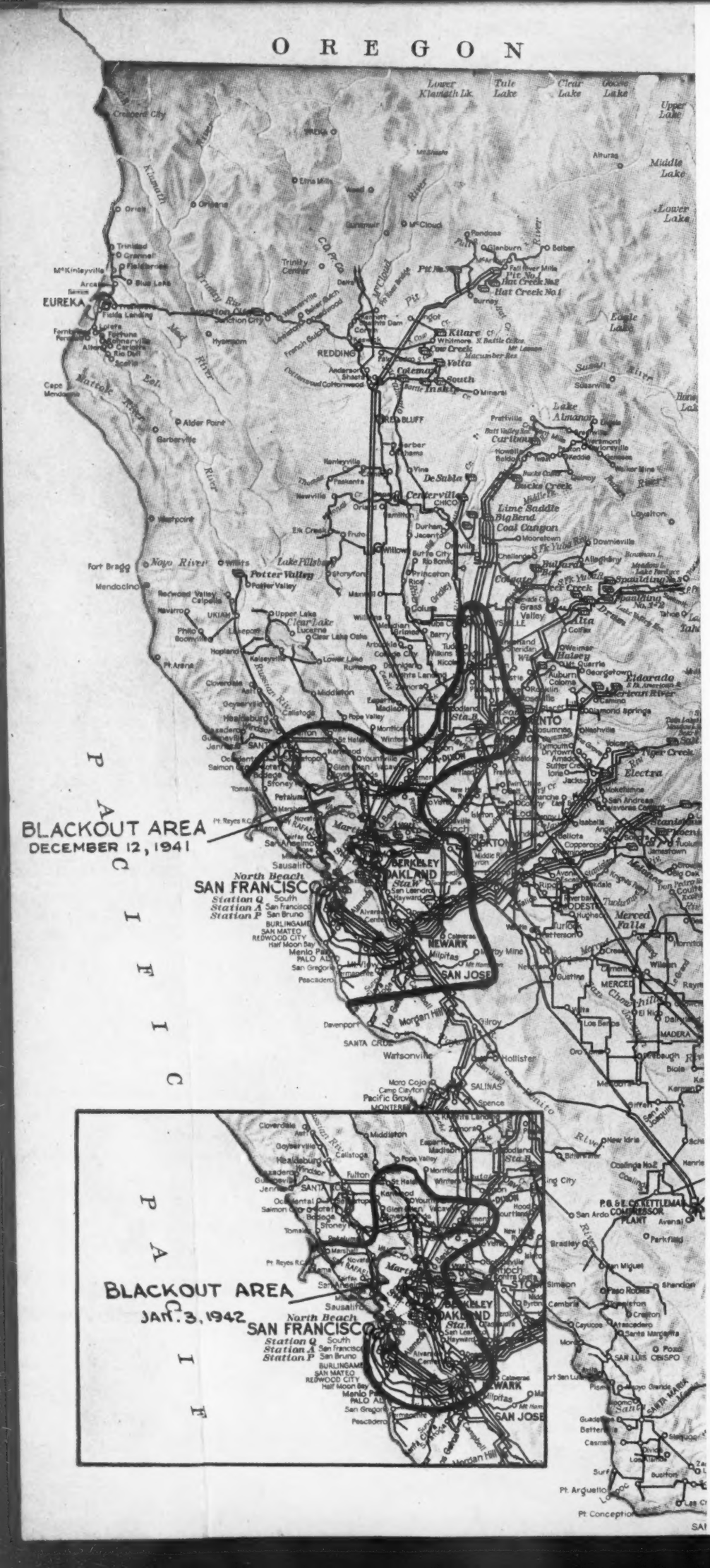
Any Lightning Arrester might fail at some time during service. With an L-M Arrester you can be sure that after being damaged it cannot lock-out a feeder or result in phase grounding. Too, any damage to the Arrester is indicated by the ISOLATOR.

For detailed explanation of the ISOLATOR and other features of L-M Lightning Arresters write us, or ask your L-M salesman, for L-M Bulletin 40151.

*An exclusive L-M feature. Patent Pending.

LINE MATERIAL COMPANY

Load Rise a



QUESTIONS as to what occurs on a large integrated electric system when a blackout causes the dropping of loads totaling upward of 400,000 kw. have been partially answered by studies made by Pacific Gas & Electric Company during two major air raid alarms, the first on December 12, 1941, and the second on January 3, according to F. R. George, engineer of electrical operation of the company, in the following statement made to ELECTRICAL WORLD.

The minute-by-minute system load curves that were taken up for the two blackout periods indicate what operating engineers may expect in the way of load deceleration and acceleration, and in the case of a diversified system, at what percentage of total load the demand for electric power becomes stabilized during a blackout. Plans for making studies of this kind had been perfected earlier following study of practice blackouts conducted in various Pacific Coast cities during the spring and summer of 1941.

Several blackouts were experienced up and down the Pacific Coast during the days immediately following the attack on Pearl Harbor. The first, on Monday evening, December 8, extended from central California along the entire Pacific Coast into Canada. It was, however, not synchronized and, except for those communities that had held previous practice blackouts, comparatively ineffectual. Subsequent blackouts occurred almost daily with increasing effectiveness.

On December 12, between 7.23 p.m. and 10 p.m., the first effectively coordinated blackout took place in central and northern California, taking in the San Francisco Bay area and extending northward into the Sacramento Valley as far as Marysville. The affected area comprised about 6,800 square miles, approximately 6.5 percent of the Pacific system service area. It contains about 69 percent of the total system load. The result of the blackout interpreted in terms of system load change is shown in the accompanying chart.

The slope of the curve is a measure of the time required to reach blackout. In the initial ten minutes much of the major metropolitan load, plus street lighting throughout the area affected, was cut off. The progress of the blackout was slow as it spread out into the outlying districts where the means of relaying word to the public had not been totally perfected.

Total system load dropped from 1,005,200 kw. at 7.20 p.m. to a point of stabilization of 602,000 kw. in 46 minutes, a total drop of 403,200 kw., or 40.1 percent. In the area actually affected by the alarm the load at 7.20 p.m. was 694,000 kw. and the stabilization point 274,800 kw. Thus the load drop there totaled 60.9 percent. The actual load loss in the first five minutes of the blackout was 104,500 kw., or 10.4 of the

←

MAP of service area of Pacific Gas & Electric Company showing sections affected by blackouts of December 12 and January

SYSTEM load curves showing minute-by-minute load changes during the blackouts of December 12 and January 3

The December 12 blackout took more time to accomplish, both because the area affected was larger and also the technique was not perfect. The point of relative load stability was not reached almost an hour after the initial alarm. In the January 3 case the blackout took place with greater speed—within ten minutes—despite the ineffectiveness of air raid warning signals in some communi

se and Fall Rates in Coast Blackout

Two major blackouts over wide area of central California provide opportunity to study load acceleration and deceleration—System speed deviations were held to a minimum

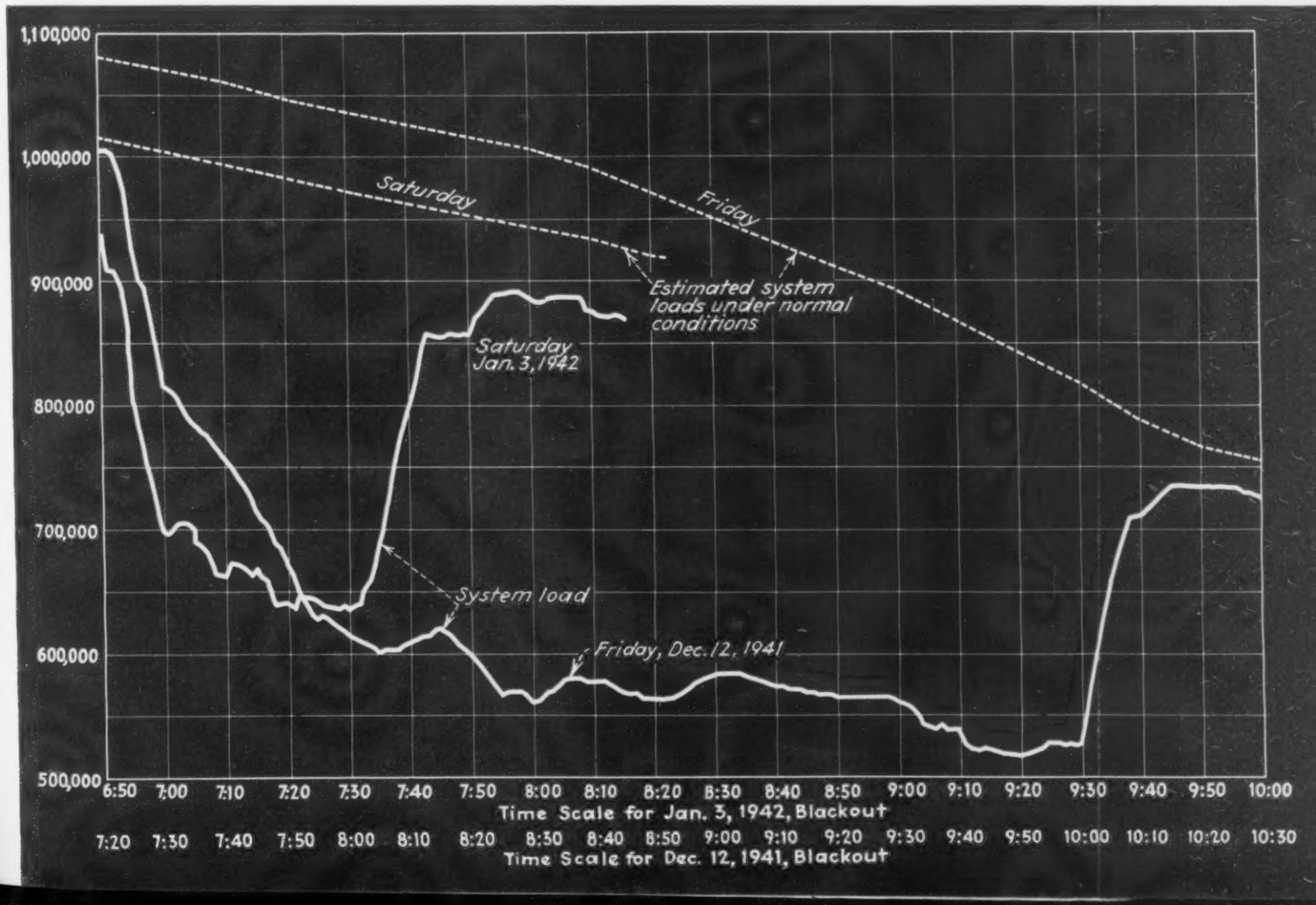
system total. The maximum one minute drop was 48,000 kw. From 527,700 kw. at 10 p.m., when the "all clear" signal was given, until 10:16 p.m., when a point near normal was reached, load increased 207,200 kw. to a total of 734,900 kw. The actual increase during the first five minutes was 130,500 kw., or 17 percent of the total, and the maximum one-minute increase was 28,500 kw., or 3.9 percent of the total. The estimated total loss of energy due to this blackout was 950,000 kw.-hr.

Because of the alertness and preparedness of the operating personnel at the various generating stations these large shifts in load were handled with a minimum disturbance to either system stability or speed. During the extreme load changes the maximum frequency was 60.45 cycles and the minimum was 59.65 cycles.

A second blackout, less extensive but considerably more effective than the first, occurred between 6:51 and 7:32 p.m. on January 3. In this case the area involved was much less than on December 12, comprising principally the San Francisco Bay region. During this blackout system load dropped 299,500 kw. from a total of 937,400 to a minimum of 637,900 kw. Maximum one-minute drop was 64,000 kw. between 6.54 and 6:55 p.m. This is 6.8 percent of the total load. The maximum one-minute increase following the blackout was 27,000 kw. A total of 251,900 kw. was recovered following the "all-clear," representing a percentage recovery of 95.

In this case the time between the initial yellow "alert" signal and the red "alarm" was but four minutes. However, here again the personnel at substations and power plants was able to handle all of the operating details without difficulty. In the interim between December 12 and January 3 many time-clock-controlled street-lighting circuits were placed under relay control. In other instances passing communication lines were utilized for relaying. This permitted the switching off of these lights immediately by a station attendant located at a remote point.

Comparison between the system load curves for the two blackouts reveals that the area was darkened much more quickly in the latter case. Studies of the load for the area affected also revealed that customers had made considerable provision for interior lighting during the blackout, load recovery being 95 percent. Also, the percentage drop was not as great as was the case with the December 12 air raid alarm. Estimated energy loss for second blackout was 192,500 kw.-hr.

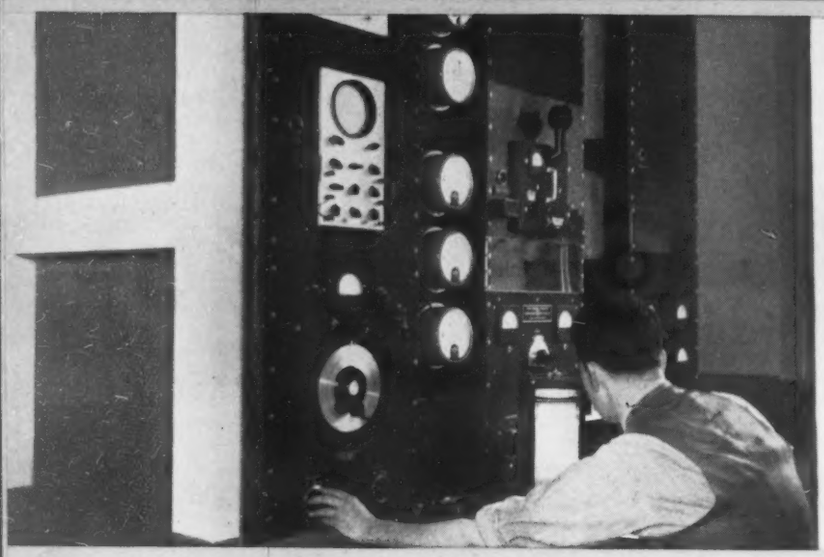


Westinghouse Briefs

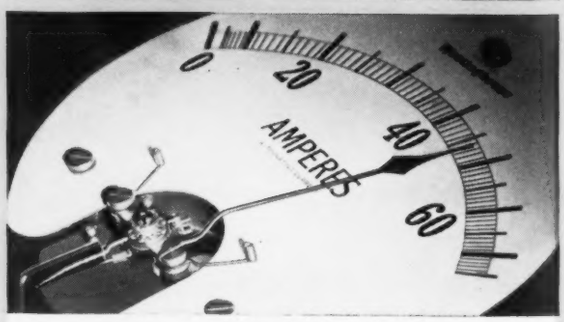
...showing some of the results of Westinghouse engineering activities in the development and manufacture of precision instruments. These activities mean greater economy for you and greater satisfaction for your customers. Your nearest Westinghouse office will gladly bring you the full benefits of Westinghouse experience.

WESTINGHOUSE ELECTRIC & MANUFACTURING CO.
EAST PITTSBURGH, PA.

J-97038



PRODUCTION LINE TESTING—Westinghouse has taken instrument testing techniques formerly confined to the laboratory and placed them on the production line. For example, to calibrate high frequency instruments at their actual operating frequency, as shown above, Westinghouse developed test frequencies that cover the entire range of electrical instrument application.

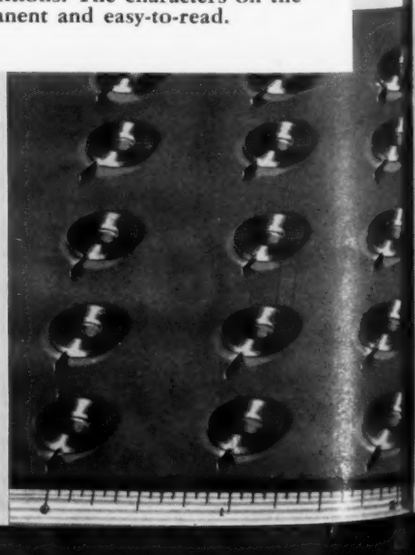


ACCURATE CALIBRATION—In this air-conditioned testing room, Westinghouse instruments are calibrated to a high level of accuracy. A Westinghouse precision laboratory keeps calibration standards in constant agreement with the U. S. Bureau of Standards.

DIALS STAY WHITE—Laboratory and field tests prove that heat, humidity and corrosive fumes do not discolor Westinghouse instrument dials. Unique plastic, developed by Westinghouse and sprayed on metal backing, insures a permanent finish that stays white under all conditions. The characters on the dial are permanent and easy-to-read.

WEAR RESISTANT PIVOTS—Hardness testing of Westinghouse instrument pivots insures uniformity in wear resistance. And photo-micrographs periodically check grain structure. The high hardness and regular grain flow of these pivots is obtained by heat treatment in an electric furnace especially developed by Westinghouse.

NON-AGING SPRINGS—Special bronze alloys, rigid torque inspection, and precision assembly make Westinghouse instrument springs absolutely uniform. Calibration accuracy is uniform over entire scale length with Westinghouse springs. Convolutions do not touch regardless of the degree of tension, temperature conditions or type of service. As a result accurate instrument life is greatly extended.



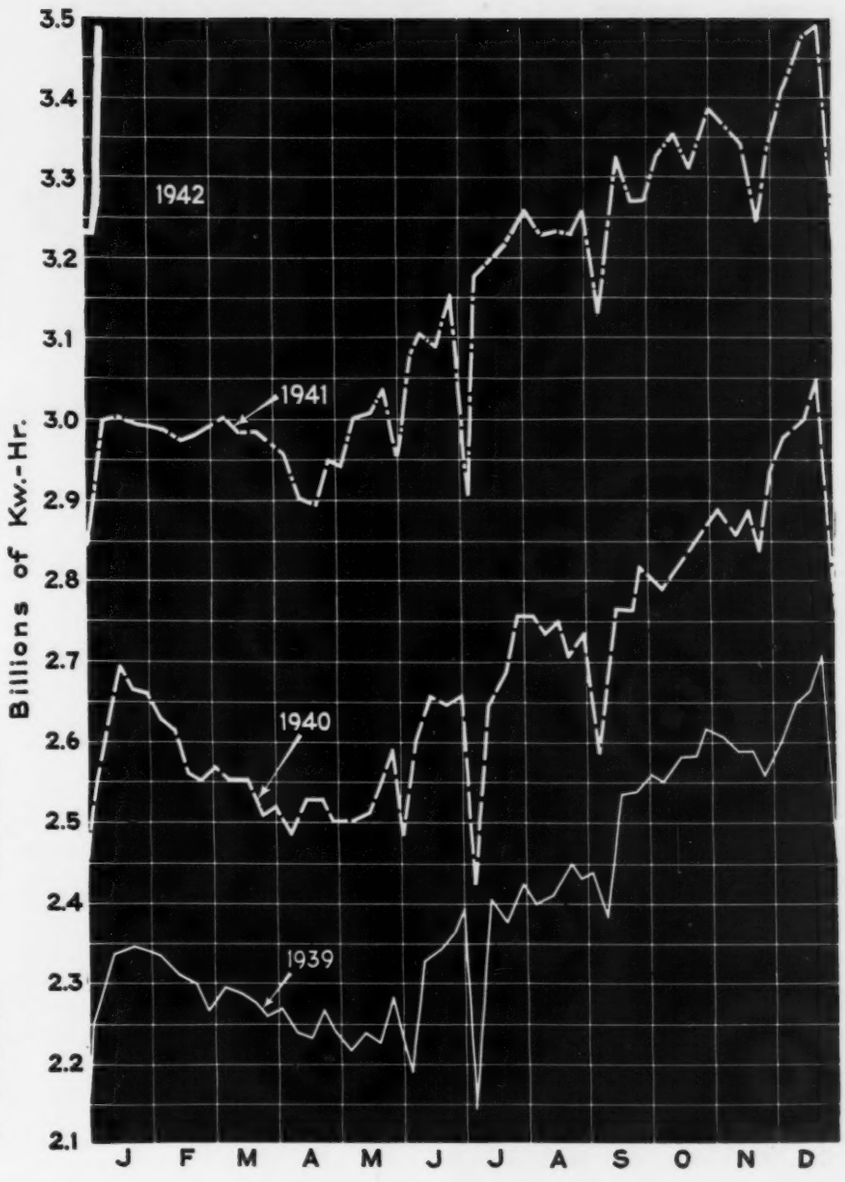
Output Registers Substantial Increase

The amount of electrical energy distributed by the electric light and power industry for the week ended Saturday, January 10, was 3,480,344,000 kw.-hr., according to the Edison Electric Institute, an increase of 192,000,000 kw.-hr., over the previous week and a normal increment by comparison with corresponding increases in 1941 and 1940.

In the two preceding years the increases were 157,000,000 and 130,000,000 kw.-hr., respectively.

The trend of the output curve from now to mid-April will be of significance to the industry in view of the important relationship between use of utility capacity and output of war materials.

In 1939 and 1940 there was a seasonal decline, but, as shown on the chart, this flattened out somewhat in 1941.



Weekly Output, Millions Kw.-Hr.

1942		1941		1940	
Jan. 10	3,480	Jan. 11	3,002	Jan. 13	2,688
Jan. 3	3,289*	Jan. 4	2,846	Jan. 6	2,558
1941		**1940**		**1939**	
Dec. 27	3,234	Dec. 28	2,757	Dec. 30	2,464
Dec. 20	3,495	Dec. 21	3,052	Dec. 23	2,712
Dec. 13	3,476	Dec. 14	3,003	Dec. 16	2,674
Dec. 6	3,415	Dec. 7	2,976	Dec. 9	2,654
Nov. 29	3,293	Nov. 30	2,932	Dec. 2	2,605

Percent Change from Previous Year

	Week Ending		
	Jan. 10	Jan. 3	Dec. 27
New England	+18.1	+16.9	+16.5
Mid-Atlantic	+12.8	+11.5	+13.2
Central Industrial	+14.5	+13.7	+15.1
West Central	+14.4	+13.8	+15.6
Southern States	+17.9	+17.8	+19.4
Rocky Mountain	+13.9	+16.2	+22.1
Pacific Coast	+22.7	+24.5	*+11.9
Total United States	+15.9	+15.6*	+15.6

* Revised.

Bonneville Substations Get $1,815,810 Fund

Announcement has been made by Bonneville Power Administrator Paul J. Raver that $1,815,810 has been allocated for additions to the Bonneville Administration's Chehalis and J. D. Ross substations.

Substation additions will include requirements for 230,000-volt and 115,000-volt lines and other lines. Of the $1,815,810 it was explained $280,540 was for additions to Chehalis and $1,535,270 for the J. D. Ross substation. The additions at Chehalis are to provide terminal facilities for lines distributing Columbia River power. Additions at Ross substation will include a transformer bank, additions to steel structures and other equpment to provide terminal facilities for transmission lines and to provide increased capacity, flexibility of operation and reliability of service.

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California to Intervene

Federal Power Commission has granted the petition of the state of California to intervene as a party in proceedings on the application of the state of Arizona for a preliminary permit for the proposed water power development of the Bridge Canyon site on the Colorado River. Hearing has been set for February 9 in Phoenix, Ariz.

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Approves New Line

Approval of an allocation of $650,000 for construction of a 115,000-volt transmission line from Spokane to Colfax to provide greater security for delivery of Columbia River power to the government aluminum plant being built at Spokane has been announced by Bonneville Administrator Paul J. Raver. The allocation will cover costs of land acquisition, surveys and mapping, design, clearing and construction.

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Bill Marked "Paid"

Hudson, Ohio, Board of Public Affairs has notified 500 families in Hudson Township and Hudson Village that their bills for electric energy used from November 15 to December 15 have been marked "Paid." "This rebate is justified because of the satisfactory balance on hand after full payment is made for the construction of our new substation, while also making suitable provision for normal requirements for the ensuing year," the board's notice said.

NEWS ABOUT PEOPLE

Allis-Chalmers Officers Assume New Duties

Changes in management of the Allis-Chalmers Manufacturing Co., announced in the January 10 issue of ELECTRICAL WORLD, page 103, under which Max W. Babb, formerly president, becomes chairman of the board and W. C. Buchanan, president of Globe Steel Tubes Co., president, are expected to improve the company's position, production-wise, at a time when heavy and increasing demands are being made on it with war work.

In becoming chairman of the board Mr. Babb is filling the vacancy which occurred on the death of General Otto H. Falk in 1940. Mr. Babb joined Allis-Chalmers as its attorney in 1904 and has been with the company since that

Max W. Babb

time. From 1913 to 1932 he was the sole vice-president of the company and in the latter year was elected to the presidency. Mr. Babb was educated at Iowa Wesleyan and the University of Michigan. Upon graduation he became associated with his father in the practice of law at Mount Pleasant, Iowa, where he remained for seven years.

After studying mechanical engineering and metallurgy at Carnegie Institute of Technology Mr. Buchanan joined the Cambria Steel Co., Johnstown, in 1904, and by 1912 was in charge of several of the company's rolling mills and finishing departments. When W. H. Donner bought the New York Steel Co., Buffalo, N. Y., Mr. Buchanan was engaged to assist its rehabilitation. Following a series of important jobs with American Tube & Stamping Co., Bethlehem Steel Co., and Trumble Steel of Warren, Ohio, he went into financing and had a hand in consolidating several steel firms, including Continental, Empire and others. Early in 1929 he joined Keystone Steel & Wire Co., Peoria, Ill. He was vice-president and general manager when he resigned in 1935 to become president of the Globe Steel Tubes Co.

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▶ CHARLES E. SWARTZBAUGH, president of the Swartzbaugh Manufacturing Co. and a past-president of the National Electrical Manufacturers Association, has been elected president of the Toledo Chamber of Commerce for 1942. Mr. Swartzbaugh is also chairman of the Toledo Defense Production Association.

▶ EBEN B. HASKELL has been appointed news-business manager of the United Illuminating Co., New Haven, Conn. Mr. Haskell will report to Charles A. Williams, vice-president. All the sales and promotional activities of the company have been combined under Mr. Haskell's direction. Mr. Haskell was formerly engaged in power sales engineering with the then Tenney group of utilities and later with subsidiaries of the New England Power Association in northeastern Massachusetts. He has been active in promotional work with the United company since going to Connecticut. Sidney F. MacLean will be responsible for all lighting activities of the company, under Mr. Haskell.

B. M. Brock Made Manager of Industrial Relations

Bert M. Brock has been appointed manager of industrial relations for the John A. Roebling's Sons Co. For the past year, Mr. Brock has been director

B. M. Brock

of industrial relations, Pittsburgh district, Carnegie Illinois Steel Corp., and prior to that was assistant director of industrial relations for the U. S. Steel Corp. of Delaware, Pittsburgh, Pa. Previously, he was manager of industrial relations for the Columbia Steel Co. at San Francisco.

Appointment of E. G. Hartmann as assistant to E. C. Low, general manager of sales has been announced. Mr. Hartmann was formerly product sales manager of the wire and specialties division. J. L. Unsworth was appointed manager of the Philadelphia branch, while W. C. Shattuck, formerly of the New York branch, was named to succeed Mr. Hartmann.

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▶ R. W. GEMMELL has been appointed to the staff of the emergency products division of the Westinghouse Electric &

Manufacturing Co. to supervise government negotiations involving ordnance equipment and special defense products. Mr. Gemmell joined Westinghouse in 1926 and worked as a railway equipment engineer until 1932. For the next seven years he served in transportation engineering and sales, and since 1939 has been in charge of aviation sales.

▶ HENRY KRUSE, formerly merchandise sales promotion director for Puget Sound Power & Light Co., has been promoted to sales promotion manager supervising all promotion and merchandise sales.

▶ DONALD S. KENNEDY, assistant treasurer of the Oklahoma Gas & Electric Co., has been appointed treasurer to succeed the late Bernard M. Lester. Mr. Kennedy has been connected with the company since 1923.

▶ HARRY J. VONNIEDA, commercial sales director of the Pennsylvania Power & Light Co., at Lancaster, Pa., has retired after 35 years of service. He has volunteered to serve in any capacity for the duration of the war on the Lancaster County Defense Council. Thirty-five years ago, Mr. VonNieda was one of a handful of men who handled all the business of the utility company in the city and county.

▶ CHARLES E. RUSSELL has been appointed by the Philadelphia Electric Co. acting manager of the newly-created market studies and applications division of the industrial and retail sales department. Mr. Russell became identified with Philadelphia Electric in 1922 as an assistant power salesman. He has served as industrial heating engineer, supervisor of promotional analysis, and directior of industrial promotion. In his new position, Mr. Russell will be responsible for keeping in touch with the development of applications for electricity and gas to industry and business.

▶ CARL A. SALMONSEN, assistant to the works manager, General Electric Co., Lynn, Mass., has been placed in general charge of manufacturing activities in the turbine, generator and gear departments. He will continue in charge of supercharger production at the River and Everett Works. Mr. Salmonsen entered the company's service in 1909 in the patent department at Schenectady, later taking a four-year apprentice course and engaging in tool designing in the motor department. His subsequent career included research work in the turbine field, executive responsibility in tool departments, initial production of refrigerator cabinets and apparatus manufacture. For 10 years he was works manager at the Peterboro, Ont., factory of the Canadian G.E. Co., going to Lynn early in 1941.

WALLACE O. LEE, vice-president in charge of personnel and public relations of the Indianapolis Power & Light Co., has received an award of merit from the Indianapolis Junior Chamber of Commerce as "an outstanding American." The citation said he has given unsparingly of his time, his money and his energy to practically every worth-while community and civic enterprise

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▶ EDWARD E. DUNN, for the past eight years assistant superintendent of distribution, Worcester Suburban Electric Co., Uxbridge, Mass., has been transferred to the engineering department of the Haverhill (Mass.) Electric Co.

▶ HUGH H. HUNTER has been appointed senior assistant utilities engineer for the Maryland Public Service Commission. Mr. Hunter had been senior electrical engineer for the West Virginia Public Service Commission, Charleston.

OBITUARY

William S. Murray

William S. Murray, consulting engineer who was in charge of the New Haven electrification and who caused "superpower" to have a national significance, died January 9 after a brief illness at his home in New York. Mr. Murray, who was chairman of the board of directors of the engineering firm of Murray & Flood, Inc., was 68 years of age.

Mr. Murray was born at Annapolis, Md., and was graduated from Lehigh University. He spent seven years with the Westinghouse Electric & Manufacturing Co. in several departments, after which he opened a consulting engineering office in Boston. In 1905 Calvert Townley, then acting vice-president of the New York, New Haven & Hartford Railroad in charge of electrification, engaged Mr. Murray to take full charge of the work of electrifying the road all the way from New York to New Haven. Within two years the road was electrified successfully from New York to New Rochelle. Mr. Murray was in charge of electrification until the entire system was completed in 1917.

During the first World War Mr. Murray conceived the idea of the superpower plan and he served as chairman of the committee of the Engineering Council which presented the matter to Congress. When Congress made its appropriation for the work to be conducted under the auspices of the Geological Survey, Dr. George Otis Smith, director of the Geological Survey, selected Mr. Murray as chief engineer of the Superpower Survey, and within the short period of a year the report was completed.

In 1913 Mr. Murray and Edwin H. McHenry, formerly a New Haven vice-president, founded the firm of McHenry & Murray. The firm was dissolved in 1917 and in 1921 Mr. Murray and Henry Flood, Jr., formed the firm of Murray & Flood, Mr. Murray becoming chairman of the board. Mr. Murray was the author of "Superpower—Its Genesis and Future" and of many engineering papers. He was a fellow of the American Institute of Electrical Engineers.

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▶ C. WALTER BADE, sales engineer of the Northern States Power Co. for the past twenty years, died at his home in Minneapolis, on December 26 at the age of 46.

▶ BENTLEY A. PLIMPTON, retired president of Victor Insulators, Inc., Victor, N. Y., died in a hospital in Asheville, N. C., on January 4 after a long illness. Mr. Plimpton was 58 years of age.

▶ CLIVE C. BELL, rural development manager for the Wisconsin Public Service Corp., Wausau, died on December 7. Mr. Bell had been identified with the company for 20 years. He had been prominent in committee work in the Wisconsin Utilities Association since 1929 and was one of the most active workers in rural electrification promotion in the state. Mr. Bell was born in Wonewoc, Wis., in 1894.

▶ MICHAEL F. NEESON, superintendent of production for the Alabama Power Co., died suddenly on January 4 at his home in Birmingham. He was 52 years of age. A native of Corning, Ohio, Mr. Neeson entered the employ of the Alabama Power Co. in 1918 as a draftsman, and served successfully as construction inspector, efficiency engineer, steam engineer and assistant superintendent of production. In 1931 he was given charge of steam and hydro-electric production.

MANUFACTURING-MARKETS

Refrigerator Sales Gains Cut Sharply

Refrigerator sales gains in November over the previous year dropped sharply, according to the report issued by the National Electrical Manufacturers Association. Domestic sales to distributors and dealers amounted to 85,597 units, compared with 74,233 units in November, 1940, an increase of 15.3 percent. This compares with a rise of 50.8 percent in October over October, 1940. For the eleven months ended November 30 domestic sales totalled 3,210,034 units, compared with 2,421,390 units for the similar period of 1940.

Canadian sales dropped from 3,069 units in November, 1940, to 2,039 units in November, 1941. Other foreign sales advanced to 6,338 units in November, 1941, from 6,246 units in November, 1940. World sales in November amounted to 93,974 units, compared with 83,548 units in November, 1940, and for the eleven-month period world sales totalled 3,384,542 units, compared with 2,560,687 units for the similar period of 1940.

Range sales in continental United States, Alaska and Hawaii totalled 38,350 units in November, compared with 25,248 units in November, 1940, and sales for the eleven-month period amounted to 635,154 units, compared with 379,613 units for the similar period of 1940.

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Cadmium Concentration Standard Issued by A.S.A.

American Standards Association has announced publication of a standard for Allowable Concentration of Cadmium.

Because of the increasing importance of toxic materials such as cadmium in connection with the defense program, and greater hazards to workers due to increased production under emergency conditions, the association has been requested by health authorities to place several toxic materials needed in defense work on its emergency list of projects. This is the first standard of this group to be completed under this emergency procedure.

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New Units Ordered for Grand Coulee

Three turbines, each of 150,000 hp. capacity, have been ordered by Secretary of the Interior Harold L. Ickes for installation at the Grand Coulee Dam power house. These three turbines, Nos. 7, 8 and 9, will complete the installation in the west power house.

Arrangements have been completed to begin at once the construction of a twin power house on the east side of the river, where nine more generators eventually will raise the capacity of this project to a grand total of 2,700,000 hp.

The three turbines will be constructed by the Newport News Shipbuilding & Drydock Co. on its bid of $1,900,000. Contract for three governors was awarded to the Woodward Governor Co., Rockford, Ill., on its bid of $87,550. The turbines are similar in design to other turbines in the west power house.

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Moves Battery Division

Philco Corp. has recently moved its storage battery division to a much larger plant of its own in Trenton, N. J. This expansion of the storage battery operations precedes by only a few months the fiftieth anniversary of the company's establishment in 1892 as the Helios Electric Co. to manufacture storage batteries. Along with its growth and expansion into the radio, refrigeration, and air conditioning industries, Philco has continued to develop its storage battery business.

Manufacturers Plan Further Increases

Electrical manufacturing production will be pushed to the limit during 1942, with not more than 10 percent of the output devoted to civilian uses, according to W. J. Donald, managing director of the National Electrical Manufacturers Association.

Capacity operation of the industry was required last year, Mr. Donald stated, to handle direct defense business totaling more than $2,000,000,000 and a similar volume of indirect defense and other business. Total volume was 75 percent above 1940, an unequaled achievement, it was said.

"In most branches of the industry," Mr. Donald stated, "production will be pushed to the absolute limit to meet requirements of the armed services and also the needs of greatly augmented activity in all other fields of manufacturing, transportation and business."

Production of generating equipment continues at an accelerated rate, twice as much being turned out in 1941 as in 1940. Transmission and distribution equipment output is estimated to have increased 96 percent over 1940 and electrical industrial apparatus, particularly electric motors, registered a gain of 114 percent.

Last year saw substantial increases in productive capacity throughout the electrical manufacturing industry and plans are in prospect for future additions. Employment throughout the industry has increased about 70 percent in the past two years and manufacturers are entering the new year with large backlogs.

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Gets Steel Tower Award

Bonneville Power Administration has awarded a contract to the American Bridge Co., New York, N. Y., at $391,847 for furnishing and constructing new steel tower transmission line from Mid-

way power substation, near Vernita (Benton County), Wash., to switching station at Grand Coulee, Wash. Line will be single-circuit, operating at 230 kv.

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Brown Tells of All-Out Production Effort

Copper is vital for victory, and fabricators in the copper industry are engaged in all-out production efforts, according to Wylie Brown, president of the Phelps Dodge Copper Products Corp. During the past year the plants fabricating copper wire and copper parts for war materials increased production in the essentials for war to a material degree.

"The coming year," said Mr. Brown, "will see redoubled activity in the fabrication of copper for war needs. Already production increases are being reported in many plants, with workers and management alike settling down to the hard fight."

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Approve Code Revision for Multiple Conductors

Proposals that conductors in sizes Nos. 1/0 to 500,000 circ.mil be run in multiple with pressure connectors at both ends have been approved by two-thirds of the voting membership, it was announced by Alvah Small, electrical committee, N.E.P.A. as the result of a letter ballot to members of the committee.

Under the present text of Sections 3008, special permission is required for multiple conductors and conductors are to be joined mechanically and electrically at terminals. The proposed substitution is as follows:

3008. Conductors in multiple: Conductors in sizes Nos. 1/0 to 500,000 cir.mil, inclusive, may be run in multiple provided they are of the same length, have the same circular-mil area and type of insulation and as few conductors as possible for the type of insulation are used. Except as herein provided, conductors shall be run in multiple only by special permission or as permitted by Section 6205. Where conductors are run in multiple they shall terminate at both ends in pressure connectors so arranged as to insure equal division of the total current between all conductors that are involved.

New York Metal Prices

	Jan. 14, '42 Cents per Pound	Jan. 6 '42 Cents per Pound
Copper electrolytic	12.00*	12.00*
Lead, A. S. & R. Price	6.50	5.85
Antimony	14.00	14.00
Nickel, Ingot	35.00	35.00
Zinc, Spot	8.64	8.64
Tin, Straits	52.00	52.00
Aluminum, 99 percent	15.00	15.00

* Delivery Connecticut Valley.

Field Reports on Business

A complete war economy moves nearer realization as restrictions on consumer goods production takes toll of an increasing number of industries. Electrical manufacturers report large orders for equipment. Under the war impact, consumers are accumulating abnormal supplies, fearing shortages, according to retailers.

NEW ENGLAND

Approximately $2,500,000,000 in war contracts were awarded in New England in 1941.

During 1942 the Navy department plans to spend $6,680,000 in the Narragansett area, Rhode Island. The Navy department has taken title to an entire city block area in South Boston including nine 13-story buildings which will be fitted for barracks to accommodate from 7,000 to 10,000 men. The remodeling will require a large amount of wiring supplies for lighting.

Boston Herald-Traveler is installing three Scott octuple presses, each equipped with two G.E. inverted double motor drives rated at 7½-hp. for threading, and 125-hp. (main drive) with full automatic control systems. Worcester (Mass.) water service has installed three booster pumps with G.E. motors aggregating 340-hp. A Boston metal producer has purchased a 500-hp. Ajax motor-generator set with a 300-kw., 960-cycle generator for high frequency melting. Ten thousand kilowatts in electric heat treating equipment was added to Boston Edison circuits in 1941 against 5,000 kw. in 1940.

Air-conditioning in connection with industrial processes is playing an important part according to B. F. Sturtevant Co., which notes among recent orders installations booked for du-Pont plants in Alabama and Virginia; Haynes Stellite Corp., laboratory, Kokomo, Indiana; Collins & Aikman Corp., textile mill, Bristol, R. I.; and Celanese Corp., Narrows, Virginia. Alarm systems for air-raid signalling are in demand.

Defense housing in this area is continuing at a good rate and wiring supplies for lighting and power should move along at a good pace. Boston Edison's 1941 peak reached 417,900-kw. as compared to 405,900-kw. in 1940. The maximum day's output was 5,555,501 kw.-hrs. against 4,921,562 kw.-hrs. in 1940.

PACIFIC COAST

Private building has sharply decreased, San Francisco's residence construction for December, 1941, for example, being $385,275, as compared with $1,170,130 for December, 1940. Defense area housing, however, has been given good priorities and, being widespread, will somewhat restore the balance.

REA lines comprise another type of business which is proceeding aided by good ratings. The largest recent machinery award was to Newport News Shipbuilding Co. for three 150,000 hp. turbines, costing $1,900,000, for units L7-8-9 for Coulee powerhouse. Manufacturers are now figuring on three 108,000-kva. generators for the same location. A $3,500,000 plant will be built near the central California coast to produce dolomite for the magnesium plant at Permanente, which is now up to 30,000-kw. demand and will probably double this figure by midyear. Capacity of San Francisco Bay area shipyards will be increased 50 percent. A $2,500,000 steel and forging plant will be built near Seattle.

Varied orders of interest include $100,000 lamp contract, $57,295 of Kelman circuit breakers, $56,800 of G.E. breaker parts, and a $263,616 to Blaw-Knox for piping system for the Harbor Steam Plant, all placed by Los Angeles, besides awards of $155,390 to I-T-E Circuit Breaker Co., $212,450 to Allis-Chalmers, and $275,000 to Westinghouse, all for Boulder plant.

NEW YORK

With the creation of a War Production Board business men are now expecting a marked step-up in production in war industries. Shocks of dislocation caused by the accelerated program are now passing on from industry to industry.

Engineering construction awards last week totalled $141,152,000, a decline of 10½ percent from the volume for the corresponding week last year as reported by *Engineering News-Record*. Private awards decreased 63 percent from the 1941 week and are responsible for the lower volume, as public construction rose 4 percent over the week last year.

Sharp increases in sales were reported for most stores in the Metropolitan area, with gains running from 12 to more than 30 percent above those of last year. The public is beginning to stock up heavily on merchandise that it believes is likely to become scarce in coming months, retailers report.

CHICAGO

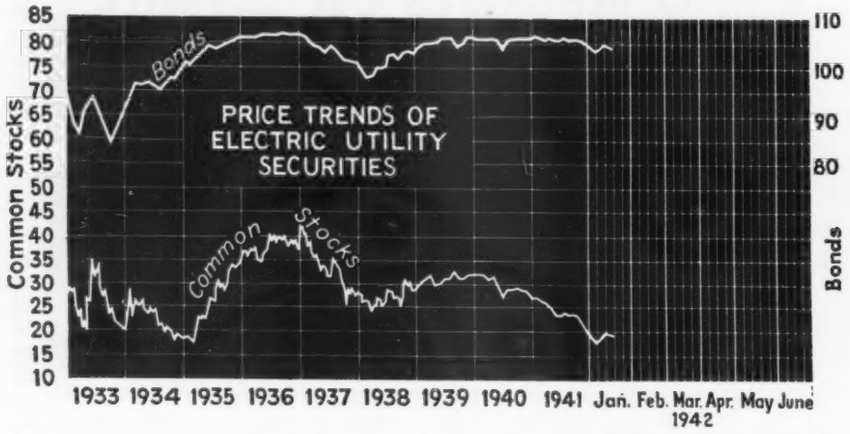
The complexion of the business situation continues to change each week as the swing toward complete war economy moves nearer to reality. Further moves to tighten restrictions on consumer goods production are taking heavy toll among an increasing number of industries, particularly in the sales forces. Electrical manufacturer's agent are especially hard hit. Wherever possible, however, these plants are being rapidly converted to the manufacture of war material so that the majority of dislocations will be only temporary.

The Navy department is preparing to place orders in this area totaling $4,000,000 including $776,000 for wire and $206,000 for marine cable. Electrical manufacturers report many large orders for industrial equipment, approximately 90 percent directly or indirectly for defense. A survey of electrical permits issued show considerable contractor activity with a large number of motors, control equipment, transformers, additional outlets and lights being installed.

At the first week of the annual winter Home Furnishing Markets, attendance declined 18 percent from last year. Orders for small appliances were taken on the basis of 60 percent of 1941 and of 50 percent for the heavy appliances. Retail trade continues at high levels and last week maintained a substantial margin of gain over a year ago.

Army and Navy orders placed here last week for electrical equipment included Belden Manufacturing Co., cords; Graybar Electric Co., connecting blocks; Westinghouse Electric Supply Co., switches, transformers, wire and cable; General Electric X-Ray Corp., $23,235.

Utility Stocks Decline; Bonds Also Drop


PRICE TRENDS OF ELECTRIC UTILITY SECURITIES
Bonds
Common Stocks
Common Stocks
Bonds
85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10
110 100 90 80
1933 1934 1935 1936 1937 1938 1939 1940 1941 Jan. Feb. Mar. Apr. May June 1942

In contrast with the general market trend, utility securities prices dropped slightly during the past week. "Electrical World" stock index receded to 19.8 from 20.1 the previous week; last year, 27.1. Bonds dipped to 104.6 from 105 the previous week; last year, 106.4

SEC Seeks Data on New Financing Plans

Holding company systems and their subsidiary operating companies have been asked by the Securities and Exchange Commission for a volume of information designed to show how much of earnings is available to finance scheduled 1942 replacement and expansion construction.

The project is being undertaken independently of OPM's Power Branch. SEC officials explain they aren't interested in what construction requirements this year may be, that all they want to know is how much utilities can spend without unbalancing their capital structure and how much new financing they expect to undertake.

SEC estimates that the 600 electric and gas operating companies in holding company systems subject to its jurisdiction spent $600,000,000 in 1941, of which $480,000,000 was paid for from 1940 earnings, $100,000,000 was new financing and the rest from cash accounts.

To get this data in estimated form for 1942 SEC has sent separate questionnaires to holding company and operating company systems to be filled out and returned "as soon as possible."

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PPD Bonds Issued

Public offering was recently made of $8,300,000 of 2½, 3 and 3½ percent revenue bonds of the Western Nebraska Division of the Consumers Public Power District of Nebraska. The bonds will mature serially from 1943 to 1972. The 2½s were priced to yield from 1.50 to 2.75 percent and the 3s from 2.90 to 3.20 percent. Prices of the 3½s will range from a basis to yield 3.25 percent to a dollar price of par for the 1972 maturity. Proceeds will be used to acquire all the electric properties of the Western Public Service Co. in Nebraska for about $6,967,927.

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Condemns Municipal Ownership System

The time soon will come when municipally owned utilities will be required to pay taxes, Col. Peter O. Knight, president of the Tampa Electric Co., predicted in his annual stockholders' report, "and when it does," said Mr. Knight, "there will be no more municipal ownership of utilities in this country."

Colonel Knight said it had been stated that the city-owned electric plant in Jacksonville netted $1,400,000 last year. "But, if such is the case," he declared, "the Jacksonville plant was enabled to do that only because it contributes nothing to the support of the county, state and federal governments."

Colonel Knight told the stockholders that it would amaze them to learn that "the electric rates promulgated by the Tampa Utility Board (which has ordered a 30 percent reduction) for our company are less than the Jacksonville rates."

Last year, Colonel Knight said, his company paid approximately $1,400,000 in taxes, an amount similar to the alleged net profit of the Jacksonville plant. "If the Jacksonville plant had had to aid in supporting the governments as the Tampa plant does, and should, the Jacksonville plant would not be making a cent," the utility head declared.

"This condition of affairs, which is incident to municipal ownership everywhere, is being condemned throughout the land, and the people are determined that all business shall pay its proportionate part of the cost of carrying on our government. . . ."

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Ickes Against Suspension of Acquisition Suits

Following decision of the city of Bremerton and the Kitsap County PUD officials to reach an informal agreement to suspend suits against the Puget Sound Power & Light Co. for the "duration of the emergency," Secretary of the Interior Harold Ickes has practically reopened the case by advising the commissioners of the Kitsap County PUD that he sees "no reason for discontinuing efforts to effect acquisition" of the properties of the utility. Both the city and the PUD had started acquisition proceedings and are in dispute over which group would take over Puget Sound's properties in Bremerton.

E. K. Vaa, chairman of the PUD, states the commissioners have adopted a resolution declaring the district's war-time policy would be "in conformity with the policy of the United States Government."

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Co-op Buys Light Plant

Announcement has been made that the Ouachita Rural Electric Co-operative, with headquarters at Camden, Ark., has acquired the Hampton plant from the West Memphis Power & Water Co., West Memphis, Ark. The West Memphis utility has been operating a small plant in Hampton for several years. The plant supplied electricity to about 300 customers in Hampton, Harrell and Banks. The co-operative has approximately 75 miles of REA lines in Calhoun County, supplying 211 customers.

Utility Reports

	Net Income 1941	1940
*Arkansas Power & Light	$1,897,253	$1,118,577
*California Elec. Power and subs.	739,198	482,839
*Electric Power & Light and subs.	7,252,514	6,489,031
*Houston Lighting & Pwr.	2,993,471	2,916,190
*Idaho Power	1,244,859	1,499,859
*Kansas Gas & Electric	1,466,549	1,536,940
*Louisiana Power & Light	1,081,037	1,069,438
*Minnesota Power & Light	1,676,407	1,372,857
*Montana Power	3,601,273	3,995,844
*Nebraska Power	1,624,252	1,659,889
*New Orleans Public Serv.	2,653,937	2,629,359
*Pacific Power & Light and sub.	883,965	799,511
*Pennsylvania Pwr. & Lt.	7,324,761	8,707,471
*Utah Power & Light and subs.	1,894,489	2,018,643

*Twelve months ended November 30.

Sales Opportunities

Private Guards for Defense Plants

State guard protection for Connecticut defense plants and public utilities will be discontinued January 17, after which vital manufacturing and power facilities will be patrolled by greatly augmented forces of armed company guards whose numbers and duties will be prescribed by the U. S. Army. Since December 8 about 1,000 state guardsmen have been on duty protecting defense works.

It is expected that about 2,000 additional private guards will have been recruited by this time for industrial and utility plant coverage in the state. Guards in vital plants will be deputized as special state police. Until such time as priorities for side arms can be obtained, the state adjutant-general will provide arms for company police.

At a conference in Hartford December 29, attended by representatives of about 30 leading industrial and utility organizations, it was brought out that 24-hour protection will be required. Governor Hurley stated that the additional cost to utilities of providing the extra protection specified will be taken into consideration by the state Public Utilities Commission in determining rates. The Governor said that the state guard was not created for extended duty along the above lines, but rather as an emergency force. Substitution of private guards will release a number of key men to industry whose absence has handicapped production.

Col. F. A. Ruggles, executive office of the Third Military Area (U. S. Army), stated that all defense plants should be surrounded by wire fencing with a cleared outside area for patrolling where feasible; that fences should have a minimum of entrances, each with an armed guard; that all dark corners on plant grounds should be illuminated except during blackouts; that ground floor windows should be screened, and three eight-hour shifts of guards maintained, with a chief of protection inside each plant.

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Allot Funds for New Line

Bonneville Power Administrator Paul J. Raver has announced an immediate allocation of $125,000 toward construction of a second 115,000 volt H-frame wood-pole line from Covington substation to Tacoma. The two lines will serve the DPC aluminum reduction plant to be built at Tacoma. DPC recently authorized the Bonneville Power Administration to construct a substation costing in excess of $1,000,000 near Tacoma. Work will soon start on this unit.

BENSON, MINN.—Western Minnesota Cooperative Power Association, Benson, will have plans prepared by General Engineering Corp., 2944 Cedar Avenue, Minneapolis, Minn., consulting engineer, for proposed new steam-electric generating stations for power supply for transmission system to serve a number of rural electric cooperative organizations. It is now proposed to increase the number of plants from three, as initially projected, to seven such stations. A fund of $1,500,000 has been secured through federal aid for part of program, with additional financing to be arranged later.

JACKSONVILLE, FLA. — Merrill-Stevens Drydock & Repair Co., Jacksonville, plans installation of motors and controls, transformers and accessories, duct lines, switchgear, electric cranes, electric hoists, conveyors and other equipment in connection with expansion and improvements in shipyard for construction and repair of vessels for government. A new 12,000-ton floating drydock will be built. Entire project will cost about $3,000,000. Fund in that amount will be provided by Defense Plant Corporation, Washington, D. C., a federal agency.

LOUISVILLE, KY.—Louisville Transmission Corp., a subsidiary of Louisville Gas & Electric Co., recently organized, has secured permission from State Public Service Commission to proceed with construction of new double-circuit steel tower transmission line for power supply for TVA, and work is scheduled to begin at early date. Company will build line to point about 60 miles south of Louisville, with remainder of system to be constructed by TVA, approximately 105 miles, to South Nashville, Tenn. Each circuit will operate at 120,000 volts. Entire project will cost about $7,700,000. Three other power companies will contribute to power pool at Louisville terminus, and will construct high-tension connecting lines to that point, these being Public Service Co. of Indiana, Indianapolis; Cincinnati Gas & Electric Co., Cincinnati, Ohio; and Dayton Power & Light Co., Dayton, Ohio.

JACKSONVILLE, FLA.—City Commission plans extensions in transmission lines, including aerial line over Trout River in vicinity of Lem Turner Road, with minimum vertical clearance of 55 ft. above mean high water. Application has been made to War Department for permission for latter work. Further extensions will be made in line on other side of stream. Work will begin as soon as authority is granted.

ST. PAUL, MINN.—American Can Co., 230 Park Avenue, New York, N. Y., plans installation of motors and controls, transformers and accessories, switchgear, duct lines, industrial lighting system, electric hoists, conveyors and other equipment in new branch plant at Como and Snelling Avenues, St. Paul, where tract of land has been secured. Cost estimated close to $1,000,000. Banister Engineering Co., 1586 University Avenue, St. Paul, is engineer for surveys and land grading, etc. Work will be placed under way soon.

FOND DU LAC, WIS.—Wisconsin Public Service Corp., Milwaukee, plans extensions in transmission lines to Fond du Lac, where connection will be made with high-tension system of Wisconsin Power & Light Co., Madison, for interchange of power. Cost estimated close to $285,000. Work will be carried out as part of 1942 expansion and improvement program of company.

WEST YELLOWSTONE, MONT.—Fall River Electrical Cooperative, Inc., Ashton, Idaho, Walter H. Bratt, superintendent, is completing plans for extensions in primary and secondary lines in vicinity of West Yellowstone, totaling about 75 miles, with service facilities. H. S. Nixon, Grain Exchange Building, Omaha, Neb., is consulting engineer.

BURBANK, CALIF.—Warner Brothers Pictures, Inc., 4000 Olive Avenue, plans new steam-electric power plant at local studios, to be used for auxiliary service. No estimate of cost announced

PERTH AMBOY, N. J.—Harris Structural Steel Co., Inc., New Market, N. J., plans installation of motors and controls, switchgear, duct lines, electric cranes, hoists and other equipment in new shipyard at Perth Amboy, where tract of about 42,700 acres of land, formerly used by Henry Maurer Brick Co., and now owned by city, fronting on Staten Island Sound, has been purchased. New yard will be used for construction of vessels of certain type for government, and is estimated to cost over $300,000.

DUTCH FLAT, CALIF.—Pacific Gas & Electric Co., San Francisco, has completed plans for proposed new hydroelectric generating station at Dutch Flat, and will begin work on superstructure at early date.

HASTINGS, NEB.—Central Nebraska Public Power & Irrigation District, Hastings, plans extensions in primary and secondary lines in parts of Dawson and Gosper Counties, totaling close to 20 miles, with service facilities. Financing has been arranged through federal aid. Application has been made for permission.

BORGER, TEX.—Panhandle Power & Light Co. has work under way on expansion at Riverview steam-electric generating plant, including installation of new high-pressure boiler unit, with capacity of 150,000 lb. of steam per hour, and auxiliary equipment. Award was made recently to Combustion Engineering Co. for boiler, and contracts for other required equipment are being made as work progresses.

TONAWANDA, N. Y.—Exolon Co., Blasdell, N. Y., plans installation of motors and controls, switchgear, duct lines, electric furnaces and accessories, industrial lighting system, conveyors and other equipment in new plant for production of abrasive products at Tonawanda, where tract of about 35 acres of land has been secured on East Niagara Street. Cost estimated about $500,000. Work is scheduled to begin soon.

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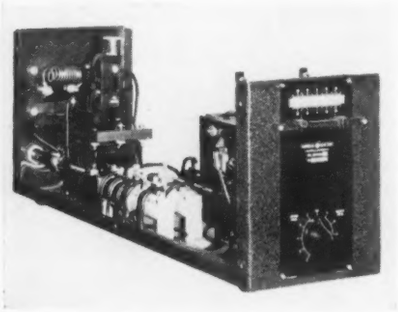
PUD Wins Case

United States District Judge John C. Bowen has signed a decree of public use and necessity which will permit Public Utility District No. 1 in Snohomish County to take over certain Snohomish County properties of the Puget Sound Power & Light Co.

NEW EQUIPMENT

Oscilloscope

New peak-reading portable instrument has a permanent-magnet type of oscillogram galvanometer and is said to have a high-speed response to both current and



Magnetic oscilloscope; 110-120 volts, 60 cycles, uses 25 watts, weight 14 lb. **General Electric Co.**, Schenectady, N. Y.

voltage. Narrow light beam from an internal lamp impinges upon galvanometer mirror, the movements of which are reflected to the viewing screen. Instrument is said to require no reset time—a quick change from potential to current measurement is accomplished by turning a switch on box front. It is almost entirely free from magnetic field interference, it is claimed.

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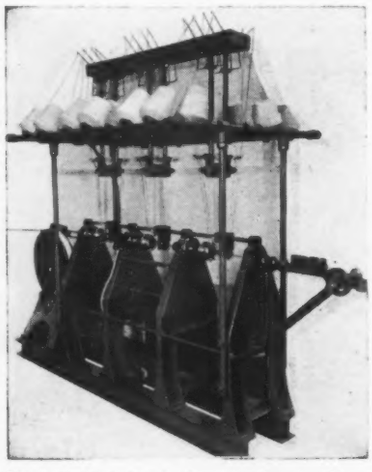
Wire Covering Machine

New machine is equipped with three knitting heads in series which knit three cotton coverings on bare wire. It has automatic stop motion for each yarn and knits directly from large cones. Separate haul-off reel stand has a 40-in. O.D., 40-in. traverse and 1,000-lb. capacity.



"Sinfra" triple-head wire covering machines; covers wire up to No. 6 at 1,200 to 1,500 fpm., driven by 1-hp. motor. **Fidelity Machine Co.**, 3908 Frankford Ave., Philadelphia, Pa.

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Lighting Unit

"No. S-5745" medical examination lighting unit; utilizes 500-watt lamp. **Holophane Co., Inc.**, 342 Madison Ave., New York, N. Y.

Two optical systems are provided by a 14-in. diameter prismatic glass globe, one for general illumination at all times, other for special illumination when and as desired. Unit has semi-rigid stem for ceiling mounting. Concentrated downward beam for critical work or examination is controllable by an iris shutter at bottom of globe; intensity is from ordinary room illumination up to full power of beam (5,600 candle-power).

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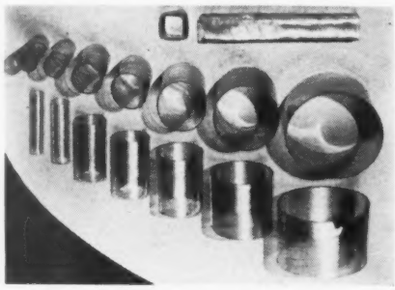
Tubing

A cellulose acetate tubing developed for the electrical industry is spiral wound



"Lumarith Protectoid" tubing; sizes 1/16 to 3 in. I.D., in continuous lengths cut to required sizes. **Precision Paper Tube Co.**, 2033 West Charleston St., Chicago, Ill.

in round, oval and square shapes with wall thicknesses from 0.002 in. to $\frac{1}{32}$ in. depending on diameter sizes. Besides clear transparent, it is also available with a paper or fiber base with an outside layer of the protectoid.

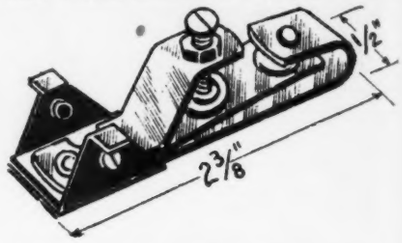
Who Makes What?

"Electrical Buyers Reference," published annually. **McGraw-Hill Publishing Company**, 330 West 42d St., New York, N. Y.

Names, addresses and products of electrical manufacturers are catalogued in this convenient, annual publication for public utility, industrial, engineering and other major electrical buying interests.

Thermostat

Assembly of thermostat comprises a $\frac{1}{2}$-in. bimetal element mica insulated from a $\frac{1}{2}$-in. spring. Temperature setting is increased by turning adjusting screw clockwise. Overall dimensions are $2\frac{3}{8}$ x $\frac{5}{8}$ in. It is



Type "ASK-BB" adjustable thermostat; capacity 1,500 watts at 150 or 230 volts a.c., maximum operating temperatures 300, 450 or 700 deg.F., supplied either normally open or normally closed. **George Ulanet Co.**, 58 E. Kinney St., Newark, N. J.

adaptable for use on electrically heated cabinets, rubber vulcanizing equipment, temperature alarms, and automatic labeling machines.

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Air Circulator

"Reco" refrigerator circulator; various sizes and types, three speeds, 1,650, 1,350 and 950 r.p.m.; 110-volt, 60-cycle, and d.c. motors. **Reynolds Electric Co.**, 2650 W. Congress St., Chicago, Ill.

New air circulator designed for use in refrigerators forces air up. The air travels along the ceiling, down the walls, and back up the center again, thereby eliminating frost and ice on coils, dissipating odors, increasing relative humidity in the room, and restricting shrinkage, it is claimed.

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Fluorescent Units

Type "RF" lighting unit; single- or twin-lamp types, open-end models, utilizes 85-watt "RF" (rectified fluorescent) lamps. **Benjamin Electric Mfg. Co.**, Des Plaines, Ill.

New lighting unit has quicker starting and a reflection factor of 79 percent, it is claimed. Full-wave rectifier type circuit employed is said to minimize flicker and stroboscopic effect, without need of special balancing devices.

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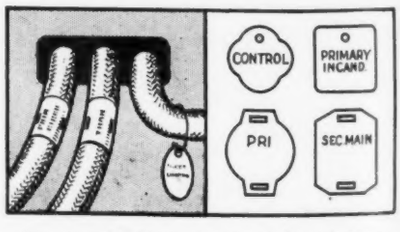
Cable Markers

Fifteen styles of alloy metal markers for underground cables are available for quick and permanent identification of circuits. Aside from the markings, which are said to become more prominent with age, and which are not easily obliterated, each type of cable is readily distinguishable by the size and shape of the tag.



Non-corrosive tags of alloy taking designations readily, and having high strength and rigidity. Maximum over-all dimension, 2¼ in.; minimum diameter or width, 1 in. **Wm. B. Berry Co.**, 88 North Street, Boston, Mass.